The Builder.

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Life and Works of Sir Charles Barry.

QUITE rightly the relatives of the architect of the Palace at Westminster thought it desirable to place before the public some account of his life and works, and this has been done by his son, the Rev. Dr. Barry, in a handsome volume of 407 pages.* He has been assisted in it, to some extent, by his brothers, Mr. Chas. Barry and Mr. Edward M. Barry, but more so by the notes of Mr. J. L. Wolfe, the life-long friend of his father. One of the most enviable features of Sir Charles Barry's life, by the way, was the possession of such a friend as Mr. Wolfe. From the time that he first made his acquaintance in Rome, whence he wrote, February 20th, 1820,—"A Mr. Wolfe, an architect, and pupil of Mr. Gwilt, has just arrived, and I have made his acquaintance with great pleasure. He is an enthusiastic admirer of art;"—to the last hour of his life, Mr. Wolfe appears to have been always at his side in any difficulty ready and able to aid, encourage, or sympathise. In the list of subscribers to the statue which was raised to Barry after his death, Mr. Wolfe's name is seen down for 200*l.*, or, as we remember to have heard at the time, for any amount that might be necessary to carry out the proposition satisfactorily, and not many weeks ago he came forward ready to protect with his evidence the fame that had been assailed. Thrice happy the man who finds such a friend! Immediately after first meeting Mr. Wolfe in 1820, Barry wrote,—"I saw immediately that he was a man with whom I could coalesce and become intimate; and the result is that I now reckon him among the few sincere friends that one can hope to obtain in the world." Never were anticipations more completely realized; never were first impressions more fully borne out.

It is unnecessary now to give readers of the *Builder* an outline of the life of Barry. This has already been done at considerable length.† Illustrations of his principal works, too,—Bridgewater House, the Board of Trade, Cliefden House, Halifax Town Hall, his design for the National Gallery and the Royal Academy of Arts,‡ the Westminster Palace, including the Interior of the Houses, the Victoria Tower, the Clock Tower, and many other works,—will be seen in our pages; and throughout his connexion with the Houses of Parliament it was satisfactory to us to find ourselves usually able, in the various discussions that grew out of the works there, to side with him in his views and defend his proceedings. What we have now chiefly to do is to give some idea of the volume before us. It contains thirty-nine illustrations in the shape of views and plans of his works and projects, and a portrait, which is only moderately like. We are enabled to reproduce three of the engravings as examples. We have chosen Shrubland Park, Suffolk, as showing some of his best garden arrangements, made in 1848.* The old House had been improved by Mr. Gandy Deering in 1830, and on this Barry had to work. The chief glory of Shrubland lay in its gardens, and it was in that direction he made the greatest improvements. The upper garden near the house was re-arranged and enclosed with balustrades. A handsome flight of steps led from the upper to the lower garden. At the foot of the steps an open loggia was placed, and the adjoining ground was laid out with architecturally formed beds. These gardens at the present moment, we may mention, are being talked of, and the greatest praise has been given to the use made there of stonework and vases for gardenesque effect. "Some of them are urn-shaped, having no place for plants; others, such as the fine handsome ones in the balcony-garden, are flat, open-topped stone baskets, not furnished; and many more of the more common patterns are scattered about, planted and unplanted. These, with the beauty of the different walls, the richness of the balustrading, and the massiveness of the copings, give a sculpturesque character to the scene which adds dignity, grandeur, and the idea of value and costliness to the whole, such as is rarely met with. Seldom or never has dead stone done more, or better, to exhibit the beauty of living flowers than at Shrubland."

The Birmingham Grammar School, the uppermost of our examples, was designed in 1833, and completed in 1836, and it was in connexion with this, Dr. Barry states, that Sir Charles first made the acquaintance of Mr. A. W. Pugin, "whose assistance he secured in making out some of the drawings for details." Here, too, he lighted on Mr. John Thomas, afterwards so intimately connected with him at the Houses of Parliament, and who was then working as an ordinary stone-carver. A remarkable man was John Thomas,—too early cut off! The Birmingham school may be viewed as Barry's preparatory step towards the great work that was to follow soon.

The third illustration we give shows his design for the enclosure of Palace-yard, and the connexion of the two great features of his building, the Clock tower and Victoria tower. His proposal was to erect a line of building, occupying the site of the Law Courts and the western and northern sides of New Palace Yard, giving ample accommodation for all public needs. New Palace Yard was to be entered on its west side by a grand gate-tower, or triple archway flanked by towers, leading by a gentle slope to the present entrances. On the south side, Westminster Hall would form a grand centre with a range of buildings on each side of it; and on the north side, if a high range of buildings were thought objectionable, a cloister with one story above it, or an open arcade, might (he thought) mask the building from the high ground of Bridge-street. The great entrance gate-tower he had proposed to call the Albert Tower, in a kind of correspondence with the Victoria Tower, which is the royal entrance, serving like it to mark the date of the building, and to commemorate the lively interest which the late Prince Consort took in all that concerned its artistic decoration.

Such was the scheme formed by him, and again laid before Lord Palmerston's Government by his son, Mr. Edward Barry, in 1864. The annexed woodcut will show its general character. It has now some special interest, because the removal of the Law Courts must soon give the question a practical importance. All that is at present being done is to complete the Clock Tower on its western side, to enclose New Palace Yard by a handsome iron railing, and to construct an arcade or cloister along its eastern side, with a subway at the northern end passing under Bridge-street to the Thames Embankment.

The volume furnishes at the commencement some interesting notes of Barry's early travels, and we are tempted to make a few extracts. The palatial fronts at Vicenza and Venice did not take the same hold upon him as those at Rome and Florence. "The Library of St. Mark at Venice, the greater Porto Palace, by Palladio, at Vicenza, and others of the same kind, had not only the cardinal vice of superimposed orders, but were offensive by the multiplicity and prominence of their details. . . . To engaged columns,—'colonnades walled up'—he had a great dislike; and when, as at the Board of Trade, he had to employ them, he always relieved them from the wall by grounds or margins. Even then they never thoroughly satisfied him. The disposition of the windows (grouped in the centre) in some of the smaller Gothic and other places at Venice was noted by him with approval, and was not forgotten when he was designing the garden-front of the Travellers' Club. Of palace fronts, in which an order was employed, he was most struck with those of the public prisons at Venice, and Palladio's Thiene Palace at Vicenza."

The Ducal Palace, magnificent as he felt it to be, did not satisfy him. Of the beauty of the arcaded stories he was fully sensible, nor did he object to arcaded exteriors in general. "But no consideration could reconcile him to arcades or colonnades supporting, as here, a heavy mass of building. Whatever might be the character of the superstructure, he required that the lower part of the building should be comparatively solid and plain: the reverse appeared unnatural. In the finest portico he was not satisfied unless the basement (or the steps) was equal in mass to the pediment above. Even in the river-front of his new Palace at Westminster he rejected the idea (once entertained) of introducing a cloister; and was so jealous of the solidity and plainness of his basement, that he grudged every window and would hardly enrich a gateway."

In the study of details of arrangement he was somewhat discouraged by considerations of the great differences between Italy and England as to climate and life. "The open *cortile*, surrounded with arches or colonnades, was a feature which delighted him, and which he often longed to introduce. There was one in his first design for the Reform Club. But in England he felt that a central hall had the advantage both in convenience and in effect. He suggested in after years the covering in of the area of the Royal Exchange, and of the still more spacious area of the British Museum. This delight in a great central hall became a passion."

The great staircases might have served more immediately as models; but he had peculiar ideas on this subject, which interfered with his admiration of those usually deemed most excellent. "Where scenic effect was given by various flights of steps, arcades, and columns, he seemed to think that space was sacrificed and a grand hall spoilt. He did not like to see 'steps hanging in the air' or supported by cumbrous walls; and sudden changes in the direction of the flights annoyed him. His ideal staircase was a grand straight flight, the whole space, however great, being occupied by the steps; but if this were impossible, he required that all that could be seen at one view should be straight, and preferred the staircase, so common in Italy, where each separate flight is enclosed in solid walls."

In Italy he first acquired that liking for visible roofs, which he afterwards showed, both in his Italian and Gothic works. He approved of them, because, being essential features, they ought not to be concealed; because, in fact, their visible appearance was the proof that the building was covered and was not a mere shell.

In study and criticism he passed the last few months of his sojourn abroad. They were

* "The Life and Works of Sir Charles Barry, R.A., F.R.S., &c., &c." By the Rev. Alfred Barry, D.D., Principal of Cheltenham College. London: John Murray. 1867.

† See especially our volume for 1860 (xviii.), pp. 305, 321, 342.

‡ Vol. xviii., p. 417.

* See p. 872.

months of great enjoyment; for his spirits were buoyant, his disposition frank and genial. But they were also months of thought and study. "It was evident" (says his friend) "that the leading principles of composition which influenced him throughout his career were already rooted in his mind."

First came a love of truth. "The false in architecture he abhorred; and all external features, which did not at least indicate the internal design, he condemned ruthlessly. Even a blank window offended him. The showy but screen-like façades, so often applied in Italy to comparatively mean buildings, were to him impostures, worthy of contempt."

Next came a love of unity and regularity. "That he had an artist's eye for the picturesque was certain, from the happy choice he was sure to make of the best points of view for sketching. But actually to plan irregularity because it was picturesque, he thought unworthy of the dignity of art." Every feature, especially every ornamental feature, he would subordinate to the preservation of the main outline, and the main principle of the design, sometimes even at the cost of boldness and variety. Unity rather than multiplicity of effect, he thought the object of human art, — a lower beauty, indeed, than that which results from the unstudied harmony of nature, but the only one which seemed to him really attainable. This view he continued to maintain, and, though he saw much beauty in works designed on the opposite principle, yet the observation of their general effect tended to confirm him in his theory.

Connected with this was his great love of the effect of spaciousness. Probably the next point most evident in his criticism was the love of perfection and completeness in detail. Nothing disturbed him so much as incongruity or want of keeping in the various parts of a design; the mingling of grandeur with pettiness, and of rich decoration with bare and unadorned features, seemed an offence against harmony; and he held that the hand of a master of his art was almost as much shown in the study and adaptation of every detail, as in the conception of a great general design. With this was connected his keen sense of symmetry and proportion. "The least offence against either,—a single feature out of scale, an opening too narrow, or even a moulding too heavy,—jarred upon him like a discord."

Early in his course he had an alarm. His churches at Manchester may be looked on as his first entrance upon a successful career. Soon after the opening of his church at Prestwich there came an express from Manchester, stating that one of the galleries had shown signs of falling during service, that the congregation had rushed out in panic, and that many were seriously hurt. By the time the long journey to Manchester was over, the report had grown into "Stand Church fallen, 300 killed and wounded." It turned out that a small hair crack had appeared in the plaster in consequence of too rapid drying. A man under the gallery perceived it, and fancied that it widened rapidly, whereupon he shouted out, "The church is falling!" The consequence of this proceeding was a sudden rush to the doors, at one of which the steps had not yet been fixed. Down went the temporary steps, and the congregation over them. Happily but few were hurt, and those not seriously; so the architect's reputation escaped.

Rather more than a fourth of the book is devoted to the Houses of Parliament, giving some particulars with regard to,—

I. The history of the competition, of Barry's success, and of the opposition with which that success was greeted.

II. The order and dates of the erection of the various parts of the building; the alterations made during the progress of design, and the notice taken of them by Parliament; the new elements introduced into the work by the appointment of Dr. Reid, to superintend the warming and ventilation of the building, of the Fine-Art Commission to direct its embellishment, and of Mr. Denison and Mr. Dent, to construct the great clock; and the assistance received during the progress of the work from other artists.

III. The controversy carried on with her Majesty's Government on the subject of the professional remuneration of the architect.

IV. The growth of the design, and the reasons which dictated its general scheme and details; and,—

V. The general description of the plan and design, so far as such description is needed as a key to the observation of the building itself.

While offering praise to the author of the biography for the manner in which he has executed his doubtless agreeable task, we are forced to remark that we miss in the book much that we looked to find. The biographer says, and we have no doubt correctly, that Barry's mind was "singularly fertile in all kinds of mechanical contrivance;" but for an account of any such contrivance we look in vain. In fact, in those respects in which the volume would have been most valuable to the professional reader it is defective; and it is impossible to shut our eyes to the fact that the life would have been better written by a literary architect than by the most eloquent of divines.

A full account is given of some of the controversies in which Sir Charles Barry became involved. Difficulties, not wholly constructional, followed one upon the other; the heating, the lighting, the clock, the bells, the drainage, brought each its share and harassed him very greatly. On many occasions he felt these bitterly, and expressed himself equally so. Thus when objections were raised to the drainage he wrote us some stringent remarks on the course that had been taken by the late Mr. Austin in making his report:—

"As I have just reason to complain, not only of the matter of Mr. Austin's report, but of the manner, in which it has been made, I would remark upon the unfair and uncourteous conduct of Mr. Austin in making his first examination and report relative to the system adopted and the state and condition of the works which were obviously incomplete, without giving me any notice of his doing so, or affording me any opportunity of explanation, before his report was printed and published. Some notice should also, I think, be taken of the exaggerated and highly-wrought clap-trap descriptions and ridiculous vignettes contained in his report, which are calculated only to appeal to the feelings rather than to the judgment and good sense of the country."

Intentions wrongly attributed to him also annoyed him. When it was said that he was about to take off the roof of Westminster Hall, he wrote to us thus:—

"There is not one word of truth in the report that the Westminster Hall roof is to be raised, nor have I made any application for authority for that purpose, although I think it would be a good job if it were raised, and the floor also, so that the latter might be well above high-water mark, which is not the case at present. What would the conservative writer in the *Guardian* say in justification of the *great* liberties that were taken with Westminster Hall in the time of Richard II.? or of the disregard of Mediæval architects in altering old buildings, of all that had been done by their predecessors?

CHARLES BARRY."

Dr. Barry seems occasionally to be seeking excuses for the length of time the Houses of Parliament occupied, whereas he might have said justly, they were built not merely quite fast enough, but too fast. We combated, again and again, to the extent of our ability, the charges of "unnecessary delay," that were constantly raised by persons ignorant of art, though influential, and had the satisfaction of hearing on one occasion, from Sir Charles himself, that our observations read to a committee of the Lords had been productive of a better feeling, and much advantage.*

The only allusion in the book to the claims recently made in behalf of the late Mr. A. W. Pugin, is contained in the following "*Addendum*" to the Preface:—

"Since this work was printed, the risk alluded to in page 195, as likely to arise from the employment of the late Mr. A. W. Pugin on the New Palace at Westminster, has been unexpectedly realised fifteen years after his death by some extraordinary claims put forward by his son. These claims, referring as they do to a question raised and settled in the life-time of those concerned, have not appeared to me to require any notice in these pages. I have therefore left the whole passage in pp. 194-198 precisely as it was originally written, without the alteration of a single word. It contains the exact account of the connexion which existed between Mr. A. W. Pugin and my father, and which, I repeat, so far as Sir Charles Barry's knowledge and feeling were concerned, was never broken by any dispute or estrangement from the day when Mr. Pugin (then a young man of 23) was first employed on the drawings of the New Palace, until the day of his death in 1852."

The account here referred to we quote,—

"As soon as he [Barry] was appointed architect to the new palace, he immediately thought of his friend, and resolved to invite him to his aid. Convinced that Mr. Pugin was at that time unrivalled in his knowledge of Gothic detail, admiring his extraordinary powers as a draughtsman, carried away by sympathy with his burning artistic enthusiasm, he could wish for no other coadjutor. The invitation was accepted, and a connexion was established equally honourable to both artists. No man was more original than Mr. Pugin. He held strongly certain principles, on the evolution of which he greatly disagreed with his friend: he was one whose name and genius could at all times command an independent authority. Yet for the furtherance of his art he was willing to accept a distinctly subordinate position, and to work under the superintendence and control of another. His acceptance of the post, and the spirit in which he discharged his duties, showed the generosity and unselfishness which were his well-known characteristics. Nor, on the other hand, could Mr. Barry be unaware of the danger of calling in a too powerful coadjutor. He knew the almost inevitable risk which he incurred of being supposed to wear other men's laurels, of having all that was good or spirited in the details attributed to Mr. Pugin, and of finding it difficult or impossible to control an enthusiasm, which might work in what seemed to him undesirable methods. But these things he resolutely put aside for the sake of an aid which he thought likely to improve his great building, and which he knew to be genial and inspiriting to himself. That Mr. Pugin was the last man in the world to encroach on another man's authority or credit he knew, and that this confidence in his friend's character was not misplaced is shown by the strong disclaimer which he put out, when an attempt was made to attribute to him more than he felt to be his due. The misapprehensions of others he could afford to disregard.

The first aid which he received from Mr. Pugin was under the pressure of shortness of time in making the original design. Working under Mr. Barry's own eye and direction, Mr. Pugin sketched for him in pencil a complete set of details, in a style perhaps bolder, less carefully proportioned, and less purely English, than would have been adopted by himself. In the design they differed *toto cœlo*. Mr. Pugin would have recommended irregular and picturesque grouping of parts, utterly at variance with the regularity and symmetry actually adopted. Except in details, he neither had, nor could have had, any influence whatever, and those who compare the details of his own buildings with those of the New Palace will readily see that even here his influence, however valuable, was chiefly indirect.

After Mr. Barry's appointment as architect, he still received the same aid in preparing detailed drawings for the estimate, most of which, however, by changes in design, were afterwards set aside. Finally, at his recommendation, Mr. Pugin was formally appointed superintendent of the wood carving, and in that capacity he directed, first the formation of a valuable collection of plaster casts of the most famous examples at home and abroad, and next the execution of the wood-work, ornamental metal-work, stained glass, and encaustic tiles throughout the whole building. But in all cases it was thoroughly understood between them that the architect's supremacy was to be unimpaired. Every drawing passed under his eye in all cases for supervision, in very many for alteration. Mr. Pugin's originality and enthusiasm never interfered with this understanding: he would carry out vigorously and heartily what he himself could not altogether approve. His suggestions and criticisms, freely given and freely received, were invaluable; and his enthusiasm, even in its eccentricities, was inspiring and irresistible. For more than five-and-twenty years the intercourse between the two friends and coadjutors continued, unbroken by any differences except in taste, and, when Mr. Pugin was struck down by his fatal illness, Mr. Barry felt that his loss was irreparable."

To the question that has been discussed we shall not here return. As every one now knows, Mr. Pugin personally requested us on all occasions to make it understood that he did nothing on his own responsibility,—simply assisted in carrying out practically Barry's own designs and views. We printed his letter to that effect in 1845, and repeated his statement in 1848 when commenting on a critical article in the *Westminster Review*, which contained the expression of a belief that the interior of the building had been committed to Mr. Pugin.*

Sir Chas. Barry was not a great letter-writer, and as no examples of his style are given in the biography, we print a letter written by him immediately after the burial of the late Mr. Pugin,—

"Westminster, September 25, 1852.

"Dear Godwin,—I am much obliged to you for the *just* mention you have made in your memoir of poor Pugin, of the part he has taken in the decorations of the New Palace at Westminster. It relieves me of all necessity of contradicting the false reports that have been put in circulation on the subject. I would almost rather let it be supposed that the whole of any credit that may be due to the work should be attributed to him, than that I should be obliged to put forth any statement of facts at the present time that might to an ill-natured world appear to be ungenerous and calculated to dim in some degree the lustre of his great fame.

I wish I could evoke your thunder in blowing up the design for the Crystal Palace *redivivus*, which, if carried out as proposed, will be a disgrace to the country and the arts of the age in which we live. I should much like to show you the suggestions I have made in vain for its improvement, which I have been induced to volunteer from a strong national feeling and a conviction that a really palatial edifice of glass on the glorious site it is to occupy, with a good outline relieved by domes and towers reflecting the dazzling lustre of a bright sun, would have such a striking and fairy-like effect as has never yet been witnessed in any mortal production hitherto created.—Yours, very sincerely, CHARLES BARRY."

An engraving of his proposed design for improving the Crystal Palace is given in the Biography. We may not, however, devote more space to the subject, though two very interesting subjects are treated of in the volume to which we have not alluded, namely, a curriculum of architectural study proposed by Sir Charles Barry to the Royal Academy, and his plans for the improvement of Westminster. Suffice it that the book contains much to interest, and rightly holds up for admiration the character of our great artist-architect.

* May we be pardoned for printing a few lines he wrote us on the subject:—

"Westminster, 21 Feb., 1848.

My dear Sir,—Accept my best thanks for your able and disinterested defence of my position as the architect of the New Palace at Westminster. It is only worthy of yourself and of the character of the journal which has the advantage of your editorial control.—Yours, very truly and gratefully, CHARLES BARRY."

* *Builder*, vol. vi., p. 337.

THE CONVERSION OF THE "ROUGH" MATERIAL.

"THE Manufacture of Roughs" is a phrase well worth holding to till the repetition of it has done most of the good work it is capable of, and then it may cheerfully render up its place to another that, under such circumstances, cannot but be more encouraging. It is something to have been brought on our own way even thus far. The phrase of "the dangerous classes" has had its currency from mouth to mouth, but spoken too often in defiance, and at best prompted by repugnance, appealing to and aggravating alarm. It is well that we should be brought to bethink ourselves of a responsibility in the case, and confront an admitted evil with all its inconveniences and dangers under some sense that doings and misdoings and omissions of our own rise up in this form of threat and annoyance. The gods are just, says the old British Edgar,—

> "The Gods are just, and of our pleasant vices
> Make instruments to scourge us;"—

but some of the severest knots in the thong are due to the carelessnesses that have little enough pleasantness to recommend them, and to others that are almost as disagreeable in themselves as any punishment they bring on afterwards. What is the Rough at his best and his worst,—*intus et in cute*,—outside and in? We have had recent opportunities of seeing him as gregarious; and specimens of the habitually solitary meet us at every turn of our best streets,—at every step in more degraded districts. *Rough* is but a moderate word as applied to the external man; that the clothing, even when sufficient, is revoltingly foul if only from unrenewed use, and that it is too often abundantly insufficient even for the better seasons of an uncertain climate,—this is but part of the account to be reckoned in with cumulative irritation that comes upon the unclean and the unkempt. All this, however, is even less distressing to remark than the underbred air of the physical man that carries about such unsavoury surroundings. There is no single type;—it is now the hulking frame that suggests how Rough may be but equivalent for ruffian, and now the small, light weedy growth that denotes the confraternity of *Filch* in the "Beggars' Opera" rather than one of the hardier or more enterprising followers of *Macheath*. "Will it please you,—hear his good now," at least as regards his growth. Comparing the roughest congregations of the Rough with recollections of certain large Continental cities, we are bound to admit,—we had almost said assert,—for our own, a freedom from some prevalent marks of physical degradation that have obtruded themselves elsewhere. Indeed, it is at once a depressing and a hopeful observation in how many of the class merely regarded as what the Greeks would call "bodies," *σωματα*,—we discern still not merely the remains but even the materials of a recoverable man. The gait is shambling, the whole frame lacks not only tone but tension, the joints are infirm, the tendons unelastic, and yet it is an instrument out of tune and out of repair that we have before us, and not, in the majority of cases, the visible heir of a constitution ruined at its core by the most pestilential miseries vice ever entailed. We have seen different things in the strata several degrees higher than the Roughs among populations under happier skies. They are still at any rate "not less than," we will not say archangels, but "Englishmen ruined," which, if not saying quite so much, is, we think, saying a good deal. And whence, then, comes the ruin? What is the process of manufacture that has turned out as Roughs the men who were capable of utility and of enjoyment, certainly,—time enough to think about refinement. The roughness of the Roughs is abundant in that less vile but ever objectionable form of all coarseness and boorishness and want of sympathy with anything but the most animal appetites and excitements; and this, after all, is but the milder outgrowth of idleness and want of healthy amusements, and privation alternating with intemperance. There is but one step from the sublime to the ridiculous; and a single step it is again that divides the condition just described from one of reckless violence and brutality, and all crime in all worse forms.

But, again, we would say for the mental as we have said of the corporeal qualifications of the English Roughs, that, speaking of the mass, and deduction made for the necessary subsidence to this level of all that is worst from all grades of society, we miss the signs of essentially and irreclaimably vicious breed. They are to a large extent good things in bad places, and comporting themselves as good things under such inveterate disadvantages will.

And so the question comes round again,—Whence the mis-manufacture that has spoilt good stuff? How does it come that what should be a supply of hardy labour, graduating from the coarsest upward to the skilled, and the sufficient capacities and fair dispositions that should find hearty exercise in the relaxations and in the domestic relations that are within reach of the humblest, should be a dangerous deposit of combustible materials at the very base of society; that the wasted energy should be ready at any opportunity and invitation to declare itself in enmity to society, to side with brutal assailants of policemen fulfilling duties in which all should aid them; that they should only have the use of language, like Caliban, as if to "know how to curse;" and that family ties should be unknown to them, or known only to be abused by unfeeling cruelty?

There is one deep black line that runs across society and cuts off an unhappy section inexorably as the "deep gulf." The line is drawn by criminal conviction. The brand, and even more, the consciousness of the prison, clings to the unhappy, and the inscription over its gates might add a horror even to the fearful line of Dante,—for he who passes out of this gate again, even more surely than he who passes in, has forfeited hope for ever. Can hope be restored to any of these? As regards adults the question would open here too large a digression; as regards the younger, these pages have already pressed urgently the considerations that are most to the purpose. Already the success of the reformatories has been a reward to those who, like Lord Houghton when in the House of Commons, braved ridicule in demanding the experiment. It is a curious peculiarity of the youthful mind that it is forgetful of the most agitating events in the very years that it is most receptive of lively impressions.

The skilful reprove grave faults of the young severely with mingled expostulation, and, when the heart is touched, immediately pass from the subject, and seem as though they entirely forgot it, as the culprit will as happily forget, even while by no means unprofited. The wound of conscience at this age fortunately heals under good treatment, and not even a cicatrice remains, or none at least can challenge it.

Education can do much to keep the poor from requiring even the saving help of the reformatory, but it must be education truly to the purpose,—to the purpose of starting the young with good chances of healthy minds in healthy bodies. The cheap gymnastic exercises should be as absolute requirements in a school for pauper children as copies of the alphabet or a black board; this sentence is somewhat dogmatical, let still one more go with it—in every school that is under public control, if music is taught in no other form, it should, at least, take that of choral singing. Our theme is how not to manufacture Roughs, and the answer has been from all time—by the dutiful instilment of the generous arts.

And then, what is to be said of instruction in the technical arts by which honest industry achieves a generous livelihood? Here the material that we manufacture into Roughs is in the presence of the possessor of industry's own field—the skilled artizan and trades-unionist, who claims it as his freehold, and hedges about the admission to it with restrictions more jealous than a lodge of Freemasons or a conclave of the Inquisition. And yet is the periclitant Rough a man and a brother. He is not excluded distinctly from consideration, either by the Bill of Rights or Magna Charta. It is the glory of England, and has been a main source of happiness, that the various classes of her society blend gradually into each other; no invidious limitations of race and descent and alliances exclude all classes but one from court; sons of peers sit down at a market table, and the debates of peers have been presided over from the woolsack by the son of a man who shaved for a penny. Is the breach of continuity to come at the line between the hungry labourer and the highly-waged artizan? Is it—we will not say fair—but is it tolerable, and shall it be tolerated, that those who are willing to give knowledge to those who most of all require it shall be hindered? that any class of society whatever shall enforce the law, "none that are lower than ourselves shall be as high as we are, and none that are as low as ourselves shall get higher?" There could be but one enhancement of the principle here involved,—"those who are higher than we are shall be brought down to our level, and those below us shall be kept down if not got down further." The country does not stand alone in the world; it will have to hold its own against others that are becoming relatively stronger daily, and such a repudiation of balanced organization would no more carry us through a crisis, of which assuredly we shall have more than one, than reducing all officers to the ranks and refusing recruits, would have carried our flag from Lisbon to Toulouse.

But if the artizans are to be called on to give free chance to those who at present are manufactured into Roughs, to become competitors in skilled labour, are they alone to make a sacrifice? Whether a sacrifice would be involved may be a question; but, waiving this, we are not disposed to pass by other classes of society without making demands upon them, and not in the way of charity, but as a right.

The condition of our cities is disgraceful in respect of uncleanliness, and of uncleanliness in positions that properly fall to public responsibility. We have not to go far for illustration. Those whose route leads them from regions Mesopotamian to York-street, in quest of their *Builder*, will find illustration for themselves in the damp rough paving of St. Giles, and the revelations of underground conditions given by the tub of disinfectant powder awaiting the black contents of some evil sewer. From a public point of view we assert the right of such streets to be as well paved and sewered and lighted as any. Streets pertain to the general public, not to the houses adjacent; and for their maintenance and cleanliness the community must be responsible—must pay. The demand upon the public purse, if the public recognizes its duties very scrupulously, is likely to be heavy. A cry comes from the children for some other space to play in besides the intervals between the trend of foot-passengers and the tracks of cabs,—some acre with a mound, if possible, for running up and down. So much for health,—and for cheerfulness something more: no street of any length should be without green leaves visible in season. Trees flourish in Cheapside, and plane-trees, at least, would grow in St. Giles's, Spitalfields, and the brick encampments of the East-end;—time enough when these localities are provided, to restore them to Trafalgar-square. Here we might enlarge also on the provision of workmen's halls and such cheerful amusement therein as would enable them to give up their present resorts to the undesirable classes with whom they at present have to share them so incongruously.

In conclusion,—for the body politic to be purified, strengthened, refined, we must use to some better purpose the material we now mismanufacture into Roughs; howbeit, all classes of society have to concede what, after all, they have no right to,—if skilled labour have to give up its aim at monopoly, and capital to perform the duties justly chargeable upon it, and be content with the balance only for profit.

AN EDUCATIONAL VIEW OF THE PARIS EXHIBITION.

THERE are many reasons why more than a cursory consideration should be given to the late Paris Exhibition, not the least important of which is the probability that, as far as France and England are concerned, it will be a very long time before we shall have the opportunity of criticising a similar display. The example set by our own country in 1851, by the International Exhibition in the first Crystal Palace, was followed in 1855 on a larger scale at the French Exhibition in Paris, and this in its turn was surpassed by the second English Exhibition in 1862, whilst the Paris Exhibition of the present year, 1867, exceeds all its predecessors either in France or England, both in the comprehensiveness of its contents and their excellence as objects of fine and industrial art. Other exhibitions of a somewhat similar nature have been held at intervals between the above dates, in different parts of Europe, though less of an international than of a national character. The frequent recurrence of displays on so large a scale, and involving such costly preparation and expenditure, has had the effect of making manufacturers and exhibitors scrutinise very closely the actual advantages to be derived from a participation in them. Where brilliant reward

have been received or distinction won by exhibitors, it may be considered that a return has been made for the great outlay expended upon individual displays; but when only moderate success has been achieved, or even no recognition of excellence obtained, then it is only natural that an adverse opinion should be formed of such costly competitions. It is in the nature of these peaceful contests that the few only meet with any reward, and, as a consequence, for a diminutive minority of successful exhibitors who are made contented and happy by their distinction, a large majority of disappointed ones must feel that their money has been nearly thrown away, or, what is still worse, expended upon making manifest to the world their own inferiority. Add to this a sense of the anxiety which has been felt by every extensive exhibitor, and the soreness arising from any instances of apparent injustice in the distribution of awards, and we have causes of dissatisfaction sufficient to account for the feeling that the present Paris Exhibition may be the last of its kind. Whether it will really be so it is impossible to say, though, judging from the present condition of the public mind, the probability is strongly against another international exhibition for a very lengthened period. This, as before said, confers an additional interest upon it, and the extraordinary excellence of much of its contents, serves to increase the importance of the lessons which may be received from their careful examination and through an impartial judgment upon them.

Tendency of International Exhibitions.

That periodical exhibitions of fine and industrial art have an educational value cannot be denied; and that their influence, both personal, and national, has tended towards a general and individual elevation of taste, is easily demonstrable. The progress in refinement of public taste, and the singular excellence of the productions of individual manufacturers or firms are to be traced almost directly to the periodical application of high standards of excellence in these international contests for superiority. There is, however, a dangerous as well as a beneficial tendency in competition so keen and thorough in the industrial branches of manufacturing art, which can never befal the more extended field of fine art. This danger is, that when unlimited pecuniary resources are available to the manufacturer, and a demand has been created for the costliest objects, excellence and fitness of design give place to mere extravagance of ornamentation, and the simplicity and refinement of true art are supplanted by a meretricious plastering of expensive details. When this stage of art manufacture is reached, the original use of an object becomes lost sight of, a pampered luxury takes the place of chaste design, costly materials become substituted for grace of conception, and instead of the cabinet or the vase being examples of the matured skill of the human mind in art applied to the necessities of the human being, they degenerate into mere indications of wealth or proofs of luxuriousness. Beauty of materials enriched and enshrined by the consecrating influence of true art-workmanship, and made harmonious by purity of style, will always have its place in the highest developments of industry; but, it should ever be remembered, that the mere money-value of the materials used may be made an apology for barbarous or frivolous art.

Another danger which may be engendered by monster exhibitions, where so much reputation may be won or lost, is the creation of an artificial and fictitious standard of manufacture, representing not so much the actual condition of various branches of industrial art, as the energy and resources of manufacturers, when pitted against one another. This produces a feverish condition, in which consistency and good workmanship are sometimes sacrificed to mere novelty and love of display. It is impossible to fix a limit at which sound workmanship or thoughtful and beautiful design shall stop; but there are well understood boundaries in the ornamentation of every object beyond which, having regard to the fulfilment of its actual use, elaboration becomes impertinence, and the application of art a frivolous waste of money.

The magnificence of the collective display of any nation is not necessarily therefore an accurate gauge of its general character as an art-producer, nor a true indication of the actual condition of industrial art among its people. In France, a country in which art appears a necessity, and its cultivation and enjoyment, through all changes of government, have been steadfastly followed for many centuries, the Exposition at the French Department of the Exhibition is not regarded as being much, if at all, above the level of the ordinary condition of industrial production. But in many other countries, as well as our own, the works of the best known and most successful exhibitors are considered to be examples only of *exhibition* work, too costly for the possession of any but the affluent or the luxurious, and far above the standard of taste of the majority of even the middle classes; whilst, if we turn from these show-works to the objects which surround us every day in England, we are conscious of the great gulf which lies between our apparent taste in Paris and our actual taste at home.

Their Good Effects.

The good effects resulting from these great International Exhibitions would seem, however, to overbalance the evil ones. Each country may possibly, in the interchange of ideas, lose one or more of its cherished monopolies, but it gains also the advantage of remedying some of its known deficiencies. Thus in the Exhibition of 1851, France was far behind England in mechanical engineering; but in 1867 there is not much difference between the two countries; and the great lead which was taken by France in industrial art and design was not felt so strongly in 1862 by England as it had been eleven years before. This year, again, we feel that in many branches of art and art-manufacture we have fallen into the rear, and shall require to make some important changes in our means of art-education before we can regain the ground already lost. Some of our manufacturers have complained that the only result of their exhibiting the best of their works at an international display has been that foreigners have copied their designs or works, and, having better skilled labour than we have in England, been able to reproduce them at a cheaper rate, and thus taken away their foreign trade in those articles. This is, undoubtedly, an individual hardship, though it is easy to see that society may be a gainer even by such a result; for it is only by similar means that nations become educated, and civilization progresses.

Educational Character of the Exhibition.

In the Fine Arts, Painting, Architecture, and Sculpture, the works displayed by the various countries of Europe were sufficiently national to be full of valuable information to the educationalist, and to others they could not help being educational in the highest sense of the word. Even the History of Labour collections were so thoroughly characteristic of the several nations and people who exhibited them, that an analysis of the objects displayed, without a knowledge of the countries represented, would have enabled an educated man to determine the main features, with much of the details, of the history and character of the various races whose antiquities were there exhibited. The same may also be said of the different groups and classes into which the whole modern collection was divided, that, where the industry of any country was fairly well represented, it displayed to the educationalist almost all that was worth knowing of the condition and history of the nations themselves. An examination of the objects which give an opportunity for the application of design and ornament, either in form or colour, would have enabled us to ascertain with almost precise accuracy the state of art-education in the country whose works were being considered, even if there were no other means of arriving at a conclusion concerning it. Perhaps it is almost a fairer test of the condition and success of art-education in a country to judge of it by its results as seen in the application of art to industry, than to form an opinion from the exercises of the students in art schools, or from illustrations of complete systems of instruction. Happily, however, both sources of information were open to us in the Paris Exhibition, for not only could we see the results of art-education in the products of many nations, but the means by which instruction was given and the systems pursued in the Schools of Art and Design were also submitted to our inspection and criticism. Having regard to our own position in England in the matter of art-education, a consideration of the question broadly may be of some interest just now; and I propose, therefore, to submit the conclusions come to by myself after a long and careful examination of the Exhibition, and to make some suggestions as to the future development of art-education in England.

English Works.

With the experience derived from former Exhibitions it might have been expected that in some of the most essential features of fine art, the English School would be deficient, and that in many branches of industrial art our manufacturers would be surpassed by Continental rivals. This has proved to be the case; and though England may well be proud of several masterpieces of industrial art exhibited in the British department, we cannot, on a comparison of the entire English display with those of some foreign nations, congratulate ourselves upon the result. It is not that we cannot, under pressure, produce works of great excellence. The cabinet of Messrs. Wright & Mansfield, the pottery of Minton, Wedgwood, and Copeland, the locomotives and machinery of Kitson, Stephenson, and Whitworth; the paperhangings of Woollams, the silver plate of Hunt & Roskell, and Elkington—all these prove that there is the power to do good things in us. What was most strongly impressed upon us in a general survey of the Exhibition was the conviction that from the contrast which existed between the best and the worst of the English works, the best were the result of extraordinary and exceptional efforts, under very great difficulties, and that the greatest of these difficulties was the absence of art power, executive ability, and technical education, in the great mass of English workmen, who were the producers of the works. Whatever other great qualities may be possessed by Englishmen, the most patent feature in the Paris Exhibition was that, as a nation, in comparison with some other nations, we could not draw; and not being able to draw, we translated art-workmanship, as it were, into our productions, as though it were a foreign language, which we speak with but an imperfect pronunciation and an evident ignorance of its grammatical construction. This was observable in almost every branch of industry or fine art, in the practice of which the knowledge of form is necessary. If we compared the English architectural designs with those of the French especially, the former, with but two or three exceptions, appeared before us utterly marred by the feeble, poor manner in which they were drawn, and in which also the absence of the power of drawing was visible in their original composition. If, again, we examined the pictures of the great European schools, the sweet harmonious colouring, the human element and the truthful history of the English school, with its pleasing subjects and perfection of finish must have been acknowledged by all; but for powerful and majestic drawing we must go to the French and German schools. In architectural drawing the French works were pre-eminent, the same power and masterly handling being evident in them as in the paintings of the French school. In their tapestries and damasks, carpets, and paperhangings, furniture, pottery, metal work, the French, and some German nations, betray perfect facility in drawing, the freedom, and boldness with which form is represented, almost in some cases, and altogether in others, running into licentiousness. Indeed, the taste and principles of design displayed in many of the foreign works are vastly inferior to some English productions. This springs more from the exuberance of power in drawing than from any other cause, as though the designers, conscious of their own strength, refused to be bound by nice degrees of subordination, or correct axioms of taste, and this is the most prominent failing in French design. The error is traceable to a deficient education in the elementary principles of ornamental art, which, though it gives a wrong direction to the taste of the ornamentist or designer, does not control his power of execution. The opposite fault is, as a rule, characteristic of English works,—the design of form, proportion, and enrichment being on the whole sound in principle, but the execution in many cases weak and feeble, as though the workmen aimed at the imitation of a design in a mechanical manner, without knowledge of art or ability to draw, and thus the original ideas, which may have been excellent, having to pass through an interpreting medium of weakness and ignorance become marred and powerless.

Influence of Instruction in Drawing.

This difference of feeling which is observable in both fine and industrial art, between the English and Continental works, is not difficult to account for; the explanation of it is to be found in the very different degree to which drawing is taught generally in England, and in France and

Germany, but principally is it owing to the superior system upon which the subject is studied, in France, at least, to what it is in England. Having examined somewhat minutely the exhibitions of the French schools of art and drawing classes at the Palais de l'Industrie in 1864, and seen some of the principal Parisian schools in operation both then and since, both of which sources of information convinced me that in ordinary schools for the middle and working classes, as well as in the special schools of design and sculpture, drawing is more generally and thoroughly studied in France than it is in England; the general superiority in art of the French, whether in industrial or fine art subjects, in the International Exhibition, occasioned me no surprise, but appeared rather the only possible and inevitable result of a wide diffusion of education in the direction which developes taste and makes art-power possible. If a whole nation is systematically trained to a knowledge of the beautiful, the higher and more refined will become either creators or appreciators of art, and will raise or maintain a high standard of taste by their works or their demands; whilst the naturally vulgar and tasteless have their coarseness modified and their eyes opened to the element of beauty. Besides the general public, there are the thousands of professional men and working men to whom a knowledge of drawing, and a perception of good forms, make the difference between the artist and the machine; and in France the architect does not rely from choice or necessity upon the carver to design his sculptured details, or the decorator to supply his surface ornament; nor among workmen are there arbitrary lines between the art-workman and rough worker, but each is in a transition state from the latter to the former, or from the former to higher ground still, according to their length of experience or diligence in study—all recognising the prime necessity of having truthful eyes and skilful hands, and knowing that the enjoyment of their work and its money value also depend upon their ability to incorporate their lessons in the schools of art with the work they have to perform, day by day, each in their separate calling. I was quite prepared, therefore, by this knowledge, for the display in the French Department this year, of such excellent workmanship, gracefulness, and fitness of form, and for the one prevailing strength running through all their works, viz., good drawing. The systems of study in the German states are not so different to that we are familiar with in England as to make them subjects of great interest; nor is their display so superior to ours as to make us curious about their art education. The French method is, however, so opposite, and the results of the instruction, as seen in painting, architecture, sculpture, and industrial art, so far beyond all that we have done recently in England, that it would be well for us if, upon the basis of our English school of art method, we could engraft that element in the French (if we can only discover it) which gives such extraordinary mastery over drawing possessed by both their artists and workmen.

Art Schools Exhibitions.

Having a desire to profit by the opportunities given of an examination into the several European methods of art education, with a view of seeing to what extent our own might be improved, I spent many days in comparing the students' works in various educational courts, and afterwards pursued the inquiry in some of the Paris schools. From the collections in the Exhibition alone an accurate comparison could not well be made, for whilst that exhibited by the Science and Art Department was an "illustration of the course of drawing, painting, and modelling, and studies for the improvement of manufactures, pursued in English art schools," the French and German studies (with the exception of those of Wurtemburg) only professed to be disconnected examples of students' works. The collection of studies produced by the students and exhibited by the master of the Lambeth School of Art, might have been fairly compared with the foreign examples of studies, because, in it no effort had been made to illustrate a system, few works having been shown, and those only of the most advanced kind.

United Kingdom.

The collection of drawings from Kensington illustrated completely every one of the twenty-three stages of art study, with their subdivisions and sections, into which the English school of art course is arranged. It included fifty distinct branches of study, commencing with that of plane geometrical drawing, and ending with examples of designs for manufactures, architectural, surface, and plastic designs. For comprehensiveness of subject the collection was not equalled in the Exhibition; nor could it have been if all the other European nations had contributed a selection from all their exhibited works to form one collection. In point of excellence of individual works, it was perhaps only surpassed by a few French crayon drawings from the cast, and by drawings of similar subjects from Nuremburg. It is to be regretted that the whole of the drawings from England were not, as they might have been, from one school of art,—such as Kensington,—and that they were not the productions of *bonâ fide* students of art-schools, but principally those of students training to become art-masters. This would have enabled us to compare them fairly with other studies of the foreign schools by artisan students. As it was, they illustrated only the stages of study in which art-instruction is given, and this they did admirably. Quite as good illustrations might, however, have been obtained from the productions of the regular students in the art-schools, whether in London or the provinces, and then we should not have laid ourselves open to the charge that whilst other nations have exhibited their students' works, we have exhibited our masters' works. Should another opportunity ever occur for a similar exhibition, perhaps it would be advisable to bear this in mind; for, from an examination of the national competitional works for this year exhibited at Kensington, I believe even better drawings were available from amongst them than were displayed as representative works in Paris.

Wurtemberg.

The only other collection which appeared to illustrate the system of instruction given in schools of art was that before referred to, viz., the Wurtemberg collection. This included freehand outline drawing, geometrical, perspective, mechanical, and architectural drawing, crayon, pencil, and charcoal shading from the cast and copies, and models in plaster. The system illustrated was very similar to, but far less comprehensive than the English; and the only works deserving of remark were the crayon and charcoal drawings, which were excellent. There are, however, indications of sound and sensible methods of study in these schools, as regards system. What is, perhaps, more interesting to us in England, just now, whilst we are on the look-out for some plan upon which art-education, in common with other branches of technical education, may be more generally extended to the masses, is the wide diffusion of the means of art-instruction in the very little kingdom of Wurtemberg. I had the privilege of meeting, whilst examining this collection, with one of the royal commissioners of the kingdom, a Dr. Steinberg, who informed me that in a population of about two millions of people, they had in active and successful operation sixty-four schools of art; that the Government appointed and paid the teachers, the municipalities in each town or village providing the place for study. The payment for instruction from the pupils varies; in some it is wholly, in others nearly gratuitous; but in one instance, that of Stuttgart, the students pay a fee of eight shillings a year. The works of forty-five of these sixty-four schools were exhibited, or portions from the works of each; and, considering the scanty population of the country, and circumstances of the people, the display was a very creditable one. In common with the English, the Wurtemberg system commences with a bold outline practice of a geometric description, advancing to curves of a more elaborate design, and, though never pursuing the practice of outline drawing through all the subjects and sections of study which we do in England, yet it seems to make clearness of line, balance of form, and cleanliness of workmanship in the use of the medium, a required accomplishment in all pupils before advancing to more difficult studies. Much importance is attached to drawing from the cast both in outline and in light and shade, and a complete set of the casts used in the schools was exhibited. Some of these were ordinary reproductions of well-known subjects, used for purposes of study in all countries, but many casts were from conventional forms cut apparently in wood, designed especially as subjects to draw from, showing in their treatment the hard outline strongly relieved, almost detached from the background, against which in England sculptors have so earnestly and so rightly protested.

Hesse, Baden, Nuremberg.

The collections from Hesse and Baden, and the Nuremberg drawings, served only to show us that art education is being very systematically pursued in those places, and that in the curriculum of their studies scientific drawing holds an important place. Much attention is evidently bestowed upon projection, solid geometry being a favourite subject, orthographic and perspective projection in the form of drawings and models, making a large proportion of the works displayed. In the German collections of works, as in the French, the absence almost entirely of coloured subjects, was, perhaps, to English art masters, the most striking feature. If exercises on colour, either from copies or natural objects, form any part of the study pursued in German or French schools of art, their importance would appear to be placed much lower in the scale than either scientific drawing, or studies in light and shade.

Darmstadt.

Educationally, the display of the Polytechnic Institute of Darmstadt, the models of geometric solids, details of machinery, and illustrations of the science of projection, was one of the most valuable collections in the Exhibition. Efforts have been made at different times in England to produce similar works for our own Schools of Art and Science, without very great success, and it would be most useful to us if this collection could be secured for the English schools.

France.

The most interesting study to an English art-master was the educational display in the French court. Here, if at all, could be detected the secret of that power of drawing before referred to which is the chief characteristic of applied art in French manufactures, as well as in the fine-art works in architecture, painting, and sculpture. After the elaborate *exposé* of the English art-school system, with its numerous stages of instruction and many sections and subdivisions, each differing from the other and all well represented, the German schools of design and art appeared to offer only a limited range of education. The contrast in this respect of the English with the German was however not so great as the German with the French, for the prevailing impression after examining the works of the latter is, that in France there are no stages, and no subdivisions, and no delicacies of system; one object is alone prominent,—drawing is the commencement of the course, imperfect and feeble enough sometimes, drawing is the middle, and drawing the end; as the accomplished draughtsman and possible artist ends, so the faltering, ignorant student begins, with the same medium, chalk or charcoal, on the same subjects as to kind, and with the one prevailing principle always in view, the absolute imitation, in masses and contrasts of light and shadow, of forms presented to the eye. There are degrees of difficulty in the subjects used for study, and infinite degrees of success in the accomplishment of the object sought—precise imitation; but if the utter absence of stages of study and nice distinctions between the several mediums used to obtain expression, if the ignoring of systematising and subdividing art study constitute in itself a system, then we may say French art-education recognises as the basis of its system, drawing alone. The schools exhibiting in the French Court were by no means so numerous as those which were so excellently represented in the Palais de l'Industrie in 1864, nor were the works of the schools, which exhibited both then and in 1867, so many or so excellent. The insufficiency of wall surface and space generally in this year's Exhibition, was sufficient to account for the comparatively imperfect manner in which the French schools were represented. Though the number of works was limited, there were sufficient to display what are the aims of the schools, and to allow of a fair judgment concerning the success which meets their efforts. The aim is very humble, the success distinguished. It is refreshing after seeing the handsome drawings, nicely mounted, of the English and some German courts, to see here the rough and roughly presented studies of French students. Occasionally a moderately elaborate light and shade drawing from the antique, was elevated to a place of honour on the walls of the French court, but the great majority were in portfolios in the wooden bins, one of which was allotted to each school. Here upon common paper were numerous studies, some from

the most execrable flat examples of ornamental design; others from casts of the antique of ornament and figure; and others from the living model; all wrought in charcoal and crayon, rubbed and stumped in their general working, and many finished by spirited touches with the chalk point, and enrichment of the deep shadows by the same means. The method of progression appeared to be from shaded flat copies to the cast, and from the cast to the living model. The first exercises were large details of ornament and animal forms, coarsely but effectively shaded in chalk, so that from the very beginning the student is taught that the end of his work is to get an effect of perfect realization in light and shade. This course of study I saw in operation in several of the municipal schools in Paris, both male and female, and can speak of it with the greatest admiration. Little boys, who with us would be languishing over outline drawing of difficult pieces of ornament, which they have to do for many weary months, in the French schools are working away deeply interested over their drawings in charcoal and chalk, studying the effect of roundness in their copy, and struggling hard to get it in their own drawings. Then I observed, that though a student in England might work for weeks over an outline which is only a bad imitation of another outline, done as it were by brute force, the French pupil either makes or mars his study in three or four evenings, and it is more or less an effort of his own feeling, his own spirit and knowledge. If he is in a low stage of perception of form or effect, he does his best honestly in that stage, and goes on quickly from it to something higher, without stopping to affect in his work a refinement he does not feel, or waste his time in the mere mimicry of finish he cannot understand.

An excellent feature of the French plan is that within a few weeks, or months at the farthest from commencement, a student leaves flat examples and goes at once to drawing from the cast—that is in effect, nature. The drawings displayed in the French Court were principally in this subject, the works themselves varying from the roughest effort to the most refined. In the portfolios from the schools of M. Levasseur, M. Lequien, and others, there were also studies from the living model, showing excellent power of drawing and thoroughly artistic treatment. Having gone through both of these schools, I am bound to say the drawings exhibited in the Champ de Mars were rather under the mark of what the students usually produce than above it.

It appears to me that this French method of teaching drawing is the one lesson which may be learnt by an art-educationalist from the Paris Exhibition. We see in all the French productions of art and industry, without exception, intense power and perfect facility of drawing, and we see in French Schools of Art a simple, easy way of teaching drawing, differing totally from all other methods displayed in the Exhibition, or that we know to exist. I do not attribute the brilliant artistic powers of Frenchmen wholly to the way in which they learn to draw; but I do say there is a definite connexion between the two things, the unique method of instruction and the attainment of unique and perfect drawing power in art. For a curriculum of professional study to produce professional artists the French municipal schools are not intended, and are, therefore, not adapted. Their aim is to get the greatest amount of the common element of all art into artisans in the short time they are under instruction. For this they are adapted, and in it they are more successful than the schools of any other nation, tested by every standard, whether it be facility in drawing, design for manufactures, or applied art, or to form the basis for further professional art-study.

Compared with the English School of Art system, the French is deficient in breadth and comprehensiveness, and yet it gets more valuable results than the English does. The latter is as well suited to professional artists as to artisans; but in trying to secure both objects it decreases its own usefulness to manufacturing industry. What we want in England is to engraft upon our system this French plan as to drawing, and then we should have absorbed, as it were, the soul of French art education. It is, I am prepared to allow, a very rough and ready method; all the more suitable, therefore, for students who begin their studies with taste and power at zero; but it has, on the other hand, capacity of development to suit the education of the most perfect taste and the maturest power. Some years ago the practice of working light and shade drawings with leather and stump as instruments, using chalk or charcoal as a medium, was entirely scouted in English Schools of Art. The examination and reports upon the French Art Schools' Exhibition by inspectors and masters of the English schools in 1864 drew attention to the excellence of the method, and its adoption was very strongly advocated by at least one master. Since then, both in London and the provinces, several masters have partially adopted the system, and it was well represented in this year's national competition in London. Anxious that we might have a fair opportunity of judging the style of work, I strongly urged upon the Science and Art Department the advisability of obtaining examples of French charcoal drawings, in my report on the French Schools in 1864. This does not appear to have been done; but in order that there might be specimens of such works in England, I ordered two specimens when in Paris, from, perhaps, the best school in Paris, a commission cheerfully undertaken by the master, and since carried out by two of his best students. These works are deposited, for the use of the students, in the Leeds School of Art; and I may add that I shall be happy to show them to any person interested in art education who may desire to examine them.

With your permission, I will conclude this "Educational view of the Paris Exhibition" with some suggestions concerning the development of our English system of art education, founded on observations upon the French and German methods, as seen in the Exhibition and in the schools, in a future number of the *Builder*.

WALTER SMITH,
Head Master of the Leeds School of Art.

SOCIETY OF PAINTERS IN WATER-COLOURS.

THIS is the sixth annual exhibition of sketches and drawings provided by the members of the Society of Painters in Water-colours, and differs very little from those of former years, excepting, perhaps, in its being more than usually corroborant of the ungratifying fact that figure-painting in this medium is an art that is gradually dying out, and that the few left who follow it show anything but a liveliness of imagination. There is this consolation, however, that there is no visible decline on the part of others whose worship of Nature includes everything that stands, moves, lives, and grows, excepting what may be positively human; who deal with the lights and shadows of existence in their positive sense, and not in their metaphorical relativeness to the prose—much less the poetry—of a living world.

As a landscape exhibition, the present collection is a very good one, with rather more distinctive evidence between sketch and finished drawing than has been the case when the white spandrel was or was not the only frame of excuse why either designation should or should not apply to the work; but even here exceptions may be found, and one of the most remarkable is by Mr. F. Walker, whose truthfulness has made it difficult to find a name for his picture; so he has given it none. 336 in the catalogue is number one in real precedence, and belongs to such effects as are not so easily described as appreciated. Two rustic gardeners—woman and boy—are tending rows of a violet plantation; they are apparently searching for the slugs and snails likely to lessen their blossom-harvest: with such unpromising assistance as a late autumnal approach of twilight; young tree-stems nearly stripped of their foliage and webbed by the spiders; fallow-fields for a background, and a cold yellowish sky, Mr. Walker has succeeded,—by rare power of imitating and a certain gift he has to make such things seem worth the imitation,—in commanding an extraordinary amount of interest and admiration for them. Mr. John Gilbert's forte is not that of imitativeness, and he himself is inimitable; whatever suspicion there is in his style of Rubens's influence has long been recognised to be as much his own—innate—as his great prototype's. His "Battle of the Standard" (26) is as full of action and as indicative of his well-known characteristics as any previous work; the sketch is resonant with the din of contest, and very suggestive of mortality to all engaged in it but the painter. A study for "Cardinal Wolsey" (193) discussing with himself the inexpediency of King Henry's impending marriage with Anne Bullen, is also by Mr. Gilbert, and as easily identified by its brilliant colour and broad treatment. Mr. F. W. Topham has but one contribution, a large sketch of "A Spanish Letter-writer" (175), very forcible, and cleverly done. Mr. F. Tayler's studies for hunting and hawking subjects have all the old vivacity and dexterity of performance common to many hundreds of cognate specimens:—"Two Sketches of Hawking in one frame: 1. A Gallop; 2. A Flight over the Sand-hills" (170); and three others,—two "Hunting" and one "Hawking" (179); the last, a fair heroine on horseback, with a falcon on her wrist, is especially agreeable. More so than Mr. F. Burton's chalk "Study from Life" (199); for, though masterly in drawing, it will disappoint those who expect to find in it one of those beautifully idealized female heads so often exhibited by him: cream-coloured high lights on a blue ground may have helped to give little charm to an ordinary set of features, of which a short nose and a long upper lip are the most striking. Mr. W. Goodall's Pyrenean peasant girls have the recommendation of being represented in a manner creditable both to them and to him, betokening improvement on his part and little need of it on theirs: whether at "Prayer" (107), very like Mr. F. Goodall's picture at the French Gallery—"At the Roadside Cross" (212); similarly engaged, or just after being so employed (19), they are substantial and well-depicted figures. Mr. E. Lundgren's smaller studies of heads, such as those in (176), the two drawings occupying one frame, 1. "An Arab Woman," 2. "Norwegian Children," have better claim to attention, because they are more natural and unforced than (44) the larger, "Study of an Egyptian Woman," which is black and very artificial-looking. Mr. F. F. Shields is of the few who do more than copy their models; his actors are usually informed with some expression proper to their situation, and even when it seems least likely to be imparted; the child clinging to her sister's arm almost speaks the title (264), "Let me go with you," in the complete and well-studied little picture, which is the best of his four contributions. But where are Mr. Birket Foster's nicely washed and combed and cleanly-pinafored village children, who always bring such comforting assurance that bread-and-butter are no delicacies, and that soap is a widely-spread blessing; that fresh air is food, and dew the only cosmetic to be relied on? "Let me go with you," would be the loud cry of many a metropolitan boy and girl, if they saw such inviting playmates. But where are they? Have London Directors and Social Improvements Commissioners bought them all up to hide such horridly healthy disheartening examples; or does Manchester still absorb as many of these contrasts to her Factory tribes as formerly? Mr. E. K. Johnson's "Night-Studies" (328) having nothing to do with elucidating social questions, it is better to return to subjects that have had more light shed upon them: these heads are very brilliant, that of the sixteenth century cavalier particularly. A "Sketch of a Girl at an Organ," by the same, is very gray and graceful in appearance, and far better than that of "A Girl at a Birdcage" (365), wherein, with regard to fritter and finish, Mr. Johnson has been his own critic, and cut up his handiwork most unmercifully. Several studies of heads by Mr. F. Smallfield, amongst some eight or nine emanations, show delicate finish and careful observation, notably "An Old Man's Head" (394). But the most careful attention, the closest observation, as well as the most indomitable industry, more frequently belong to those who, obedient to their call, pay deference with the nodding trees to nature out of doors, and listen to the sighs of the south or west breezes that whisper her loveliness under clear skies, or to the louder voice of the north proclaiming her cold and fickle, but still as alluring as most things categorized under the feminine gender are always allowed to be: they follow their instincts and their mistress all the more closely because her changes are as puzzling as charming.

Years ago (it behoves long memories sometimes not to be very precise as to dates) the late Mr. F. Danby, A.R.A., painted a splendid picture, and named it "The Painter's Holiday," wherein an idler in supine enjoyment of such a sun-bath for a landscape as he might only safely leave to his more industrious friend to paint, gave a pleasant intimation that there were intervals of rest available for the painter; but this was long before the institution of exhibitions of sketches and studies; and there are few now who would doze in fine weather, and in sight

of such a fair prospect, for with the artistic faculty there seems to co-exist a moral obligation to be always exercising it.

Mr. Carl Haag, who used to elaborate figure subjects once, and to show good academic training in all he did, seems now to devote himself entirely to landscape, unless "The Halt at the Pyramids" (6), with its camels and attendants, may be asserted in contradiction: "The Akropolis of Athens" (161), and "The Sphinx of Geeza" (203), are the themes on which he loves so glowingly to dissertate. Mr. J. J. Jenkins, too, has forsaken his Brittany first affections, and forgotten Watteau reminiscences in favour of homelier matters; and his transcripts, made "At Eashing, Surrey" (14), with that of "Goring Church, on the Thames" (22), are so rich in colour, and offer so strong an argument in support of his views, that the change is not to be regretted. "The Thames at Wargrave" (31), with green banks, a cloudy sky, and a barge trailing along the smooth water, affords sufficient means for Mr. E. Duncan to provide a choice example from. Mr. G. A. Fripp proves himself an enthusiastic student as well as a perfect master: how carefully drawn are the "Oaks in Early Summer" (55), and how admirably conveyed is the idea of light, air, and space in Hayfield or Cornfield (189). Mr. Davidson's numerous items make him an instance in proof that painters can have very few holidays; (195) "Misty Moonlight, North Wales," is the more noticeable, because, unlike anything else easily remembered of his, it is also very exquisitely done. Mr. George Dodgson, in his four choice little bits in one frame (56), looks to have added more finish to his method of production. "1. Village Gossip; 2. The Village Smith; 3. Interior; and 4. Evening in the Woods," are all remarkable for light and shadow effects and fine colour. Mr. Paul J. Naftel's "Junction of the Greta and the Tees, Yorkshire" (62), is an important study, but the use of body-colour is carried to excess in it, giving even in the foreground stones a wooden appearance: this objection is still more cogent in a sunset effect, "Near Wickham, Surrey" (74), with the sky made solidly opaque. Most of Mr. Naftel's drawings are forcible and attractive, but his manner is very confirmed. All the dozen contributions of Mr. A. W. Hunt have some peculiar charm to distinguish them; but the charms of all are culminated in (349) "Carrying Hay on the Thames," which is exquisite in its purity and variety of colour, and as nearly perfection as those who doubt the possibility of perfection will allow anything to be. "The Weir at Pangbourne: Windy Day" (340), will show, to some extent, that it is not only with such aids as dappled sky, pellucid water that clearly reflects surrounding objects in its depths, or the richness of hue proper to trees, and their shadows under calm evening influences, that Mr. Hunt succeeds; and that he is versatile in his extraordinary apprehension of natural facts. Mr. J. Holland and Mr. E. A. Goodall are still doing "Venice," and the latter has done a picturesque bit of "London, from the Thames" (277), well enough to compare with his Venetian scenes, which are known to be admirable. Mr. S. P. Jackson's "Scraps on the Thames: 1. At Streatley; 2. Old Bridge at Goring; 3. Whitechurch Lock; 4. Streatley Mill;" and a larger study of "Twilight" (298), bear witness to his careful consideration and great ability as a draughtsman, though even stronger evidence might be educed from the seventeen opportunities afforded. Mr. H. Gastineau vigorously upholds his fame as a sketcher some twenty times in the course of the gallery; so does Mr. Collingwood Smith, if less often, not less well: and Mr. W. Callow, whether in landscape or marine, shows an equal facility in rendering either. Mr. H. B. Willis, whose art is sometimes in the Highlands, (284), devotes as much attention and apt dexterity to the portrait of "A Heifer's Head" (25), and again to a "Study of a Sheep's Head" (205), as if they had been commissioned by their respective family. (237) "A Sketch of Farm Horses," by the same, is very excellent, and these form but a small portion of what Mr. Willis exhibits. Mr. S. Read has a capital study of the "Tomb of Rubens, in St. Jacques, Antwerp" (227), and Mr. J. Nash several interiors. Besides a bold impressive drawing of a "Mountain Pass, Loch Katrine" (3), Mr. T. M. Richardson has, amongst other forcibly-executed sketches, "Two Studies in Charcoal: 1. Inverlochy Castle, Argyleshire; 2. A Highland Glen" (236), which are very masterly, and show what satisfactory results may be expected from those who know how to use whatever most readily comes to hand. Mr. Branwhite is not to be deterred from following his profession under the most chilling circumstances; if "Winter Evening" (272) were studied out of doors, he must be one of Nature's most ardent admirers indeed; whilst Mr. E. Burne Jones's manual expressions lead to the inference that he does not know that lady, and does not want, since his designs are for Gothic decoration. Mr. T. R. Lamont exhibits several figure compositions of various degrees in merit; Mr. F. Powell some clever but mannered landscapes; and Messrs. A. Glennie, Whittaker, Collingwood, D. Cox, G. P. Boyce, J. Callow, and S. T. G. Evans, are ably represented.

(346) "Near Soll, in the Tyrol," is Mr. T. Danby's most attractive contribution,—a very pleasing, brilliant little drawing.

THE DANGERS OF THE VIRGIN ISLANDS.

Our readers will observe in the public papers the account of the dreadful calamity that has befallen some of the Virgin Islands, amongst them that picturesque and charming little island, St. Thomas, "the gem of the Tropics." The fearful destruction of human life, amounting, it is said, to upwards of 500 persons, and property, both the houses at "Charlotte Amalie," and shipping of the harbour and neighbourhood, is perhaps unparalleled in the history of hurricanes.

The writer of this has had the *advantage* of being in two hurricanes, one on land and one on water, and he can speak feelingly as to the depredation and panics those dread convulsions of nature produce: the accounts that have usually been published (and probably the one in the present instance) fall very short of the actual reality: they must be seen and felt to be duly appreciated.

Those who have not experienced such stirring scenes, and live at home at ease, can scarcely form an idea of the horrible upheavings, oscillations, and vibrations of earthquakes, or the still equally dreaded hurricanes, when the blasts from heaven appear all concentrated in one fell roar and swoop, as if intended to sweep all living things from the surface of the earth and sea, and reduce all creation and created things to one inextricable and common ruin.

It is sincerely to be hoped that this melancholy catastrophe, coupled with the devastation that has taken place amongst the crews and passengers of the steam-ships belonging to the Royal Mail Steam-packet Company for some time past, from yellow fever, produced by that hot-bed of disease, the harbour of St. Thomas, will induce that company to seek some other station as the rendezvous for the Atlantic and intercolonial steamers.

The picturesque beauty of this fair isle, the exquisite and perfect character of the harbour, being securely land-locked, with the entrance opened to the south, the excellence of its geographical and commercial position, ought not to be taken for one moment into consideration against the weighty arguments that it is unfit for their station, in consequence of being more exposed to hurricanes than other places; and its unhealthiness is so notorious, that few like to land there, and the sailors of the steam-ships dread lying there, as many as thirty men having been lost of the crew of one ship in one fortnight, while the outward-bound steamer is waiting for the return or intercolonial mails.

Of late years St. Thomas seems to have been frequently visited by hurricanes: from 1827 to 1837 there were four hurricanes there, while there were only two at Antigua in the same period: they appear to take their rise near the Leeward Islands, and sweep towards the north-west, and therefore do not produce so much danger there as in those places situated in their course, when they have attained their concentrated force, fury, and impetus.

The distance from Antigua to St. Thomas is about 240 miles, and the former does not appear to have been affected by this hurricane.

In 1863, when the contract for the conveyance of the mails was about being renewed between the Royal Mail Steam-packet Company and the Government, the writer suggested, that the station should be removed to a more convenient and healthy place, and for that purpose he made a survey and report of Falmouth and English harbours in the Island of Antigua (an English colony), for the Governor-in-Chief of the Leeward Islands, which survey and report were sent home to the Lords of the Admiralty, and were highly approved of by the late Admiral Washington, at that time hydrographer of the Admiralty.

The soundings of these harbours were found in the Admiralty charts to be incorrect, and accordingly Commander Parson, R.N., was sent out by the Admiralty to resurvey and sound the harbour, and prepare a corrected chart, with proper soundings, and other data shown thereon, and the harbour of Falmouth was found admirably adapted for the purpose of the packet station, requiring only slight alterations and improvements, and it is quite large enough to accommodate the whole fleet of the Royal Mail Company, with their attendant colliery ships.

It was suggested to dredge and deepen the entrance to Falmouth Harbour; throw out a breakwater to protect the shipping while lying there from the effect of hurricanes, to which it is not often exposed; and to connect the two harbours, English and Falmouth, together by cutting a ship canal through a narrow neck of land that separates them, and thus to make English Harbour as well as Falmouth available for the service of the Company.

English Harbour is now a naval station of the Admiralty, and part of our West Indian fleet occasionally shelter there during the hurricane months (from July to November), the first-class frigates of which draw from 22 ft. to 23 ft. of water,—quite as much as the largest West India steamer when fully laden.

It is to be hoped that this awful catastrophe will produce a good effect and open the eyes of the Government and the Royal Mail Steam Packet Company to the desirableness of carrying into effect the suggestions thrown out; as, apart from the terrible hurricane calamity, our Government ought not to be a party to a contract with a Company who, by a perverted and short-sighted policy in pertinaciously adhering to this station (St. Thomas), thereby inflict such a deadly injury upon a valuable and indispensable body of men like our true British tars, who can be ill spared at the present moment.

PARKFIELD, PERSHORE ROAD, BIRMINGHAM.

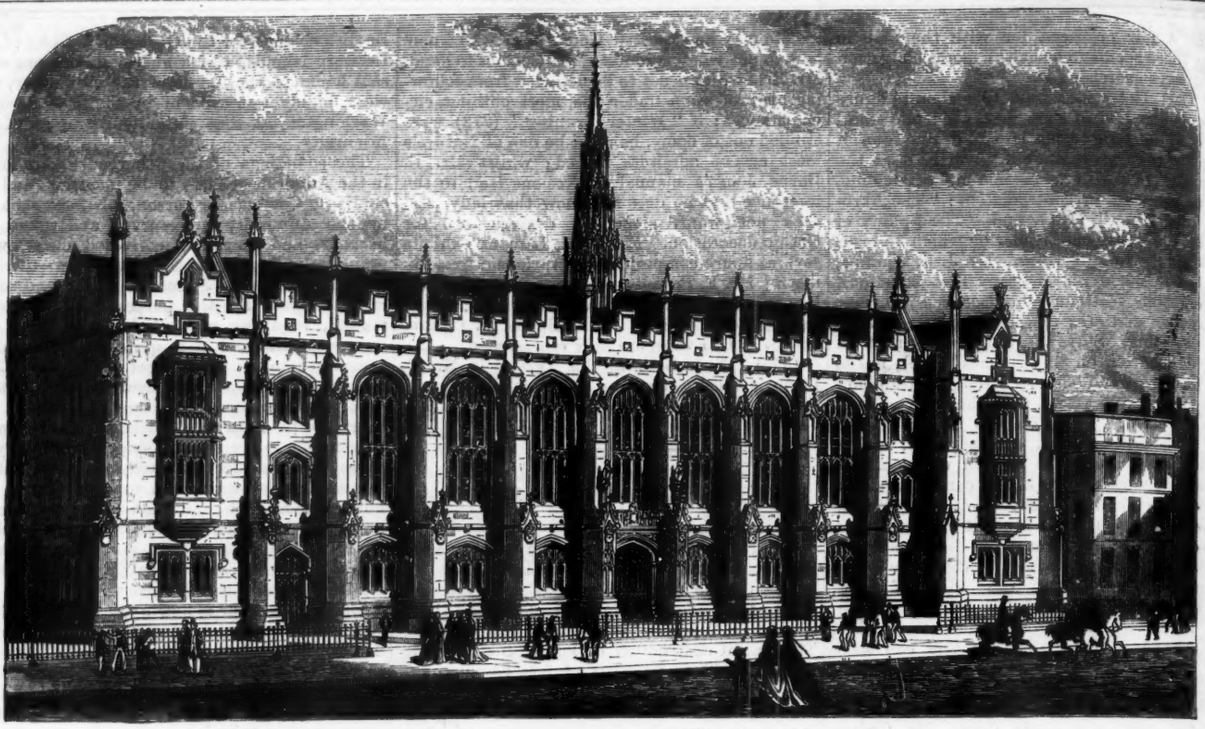
This house has been built by Mr. Cranston, of Birmingham, architect, for his own occupation, and is constructed entirely of bricks, the great bulk of the work being in red bricks, relieved with blue bricks for the sills, and Maw's tiles, in bands, under the eaves and round the entrance doorway.

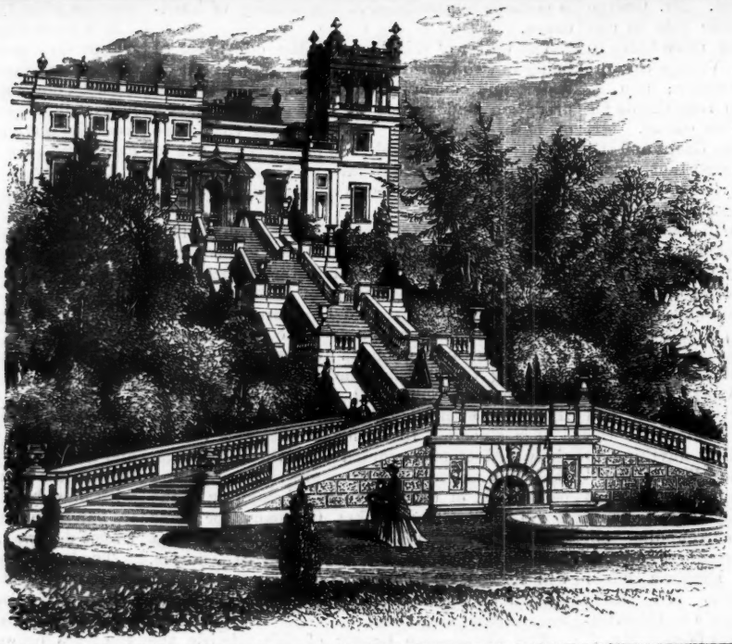
The house stands upon a terrace, and is raised up several feet above the general level of the site, which measures an acre in extent.

The labels over the windows, and the caps to the piers between the windows, are all formed in red bricks, cut by hand, this being found less expensive than having moulds made and bricks burnt to the required shapes, as well as producing much greater sharpness of outline. The drawing, dining, and breakfast rooms, with the entrance-hall and staircase, have ornamental wood cornices and ceilings, each being different in detail, but of uniform character throughout. This woodwork is cut, pierced, and slightly treated with colour, and in the two principal rooms the ceilings are broken up, each into three divisions, by beams and cornices running across, carried by cut corbels, springing from brick pilasters in the side walls. The bricks in these pilasters are decorated in colour, and midway up in each is a marble bracket, placed to carry the gaslights, made for these positions, and arranged with a bell-shaped consumer over each movable arm of the lights, so that the ceilings are protected from the effects of the gas.

The conservatory, of construction as patented by Mr. Cranston, is placed between the drawing and dining rooms, and is common to both by plate-glass windows in the rooms, as well as being a very agreeable feature in the hall, from which it is screened by a glazed partition and doors.

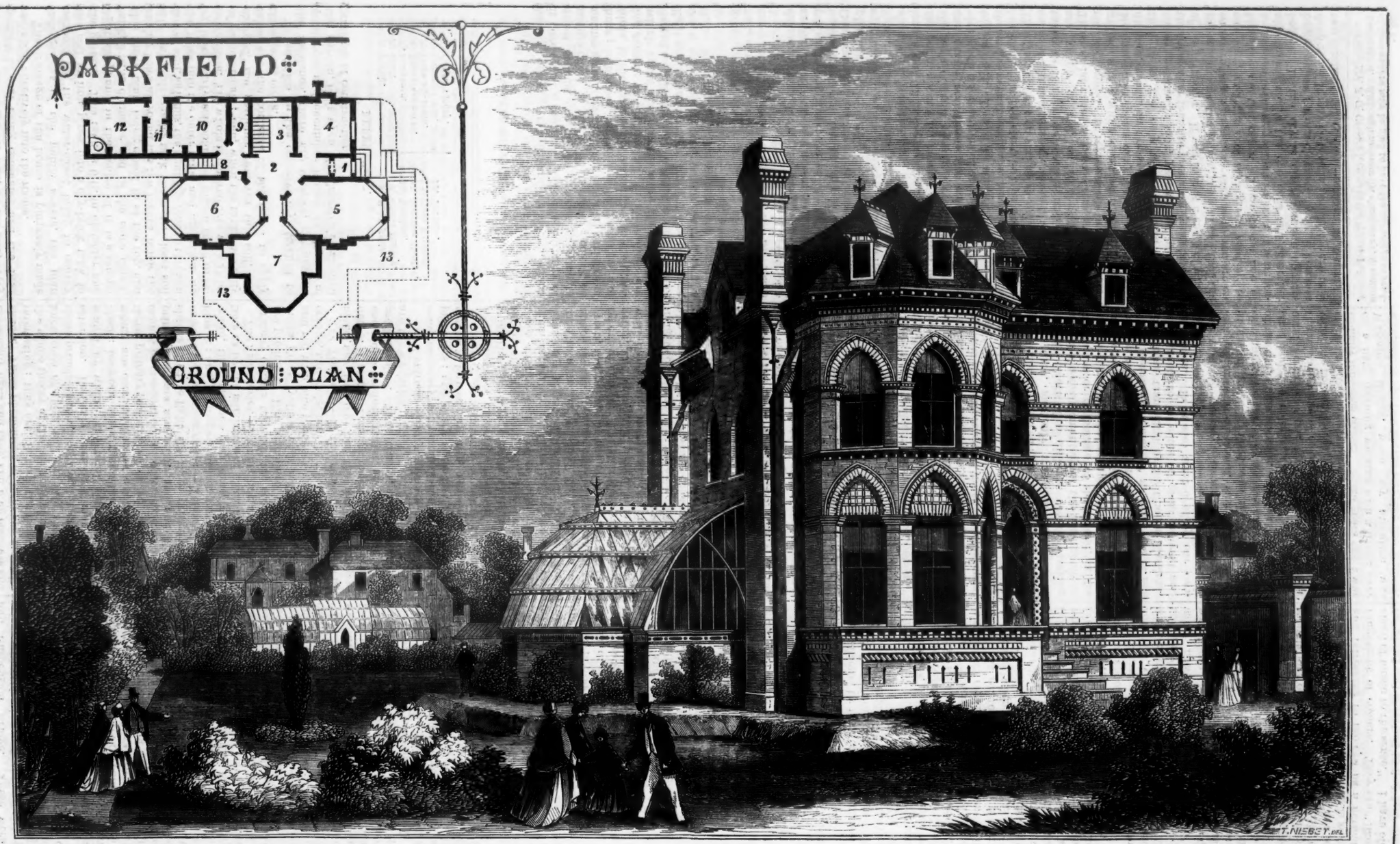
The fireplaces in the living-rooms are large and open, with chimney-corner seats, and are constructed with bricks, iron, marble, and Maw's tiles. Grates of the ordinary kinds are not used, but octangular solid fire-clay lumps, 18 in. in diameter and 6 in. thick, with iron spikes round them to keep up the coals, are placed upon the hearth-stones. The fires upon these





WORKS OF THE LATE SIR CHARLES BARRY, R.A.

[See p. 865, *ante*.



PARKFIELD, PERSHORE ROAD, BIRMINGHAM.—Mr. Cranston, Architect.

solid clay blocks answer well, we are told, every particle of coal being consumed and the heat radiating effectively into the rooms.

The drainage of the house is purposely made independent of the public sewers, the plan adopted for the water-closet being to convey the soil by iron pipes into a dry-brick tank in the garden. This tank is 6 ft. in diameter and 3½ ft. deep, and in the centre of it is a second tank, 3 ft. in diameter and of the same depth, this inner tank being closed in at the top, and having holes all round it a few inches below the lid. Into this smaller tank the water-closet soil flows; and, as it fills, the liquids percolate through the holes into the outer tank, and are taken up by loose turfy soil and peat placed there to receive them. The whole is covered over with 18 in. of garden-mould; and, when the tanks are fully charged, the gardener removes this soil, and takes out the contents of the tanks to apply them to his crops.

In addition to the conservatory attached to the residence, there are vineries, greenhouse, mushroom and cucumber houses at the top of the garden, built upon Mr. Cranston's patented principle of construction.

REFERENCES.

1. Porch.
2. Hall.
3. Staircase.
4. Breakfast-room.
5. Drawing-room.
6. Dining-room.
7. Conservatory.
8. Back Stairs.
9. China Pantry.
10. Kitchen.
11. Kitchen Pantry.
12. Back Kitchen.
13. Terrace.

ON COLOUR.*

Form and colour are the great elements of beauty: colour gives spirit and life to form, which it developes by contrast. Like the harmony of sweet sounds, one of the greatest enjoyments nature offers to the mind is colour; colour, as nature gives it, with all her beautiful varieties of hues; in flowers and foliage, in the plumage of birds, in the varieties of butterflies, in the glowing sunset; and, above all, in the radiant arc which spans the heavens when the sun is reflected on falling rain. When the direct rays of light are intercepted, as by a prism, they give out a series of brilliant colours, known as the Solar Spectrum. These colours are presented in the following order:—Violet, indigo, blue, green, yellow, orange, red. To obtain this result, it will not be difficult to make the following experiment, the one originated by Sir Isaac Newton: make a narrow slit in a shutter of a darkened room, facing the sun; let the rays of sunlight strike through the prism, held at a proper angle, and the spectrum of vivid colours will be thrown on a screen suitably placed. To carry this experiment out more perfectly, the following plan has been contrived:—In a box about 16 in. square, adapt a lens through which the rays of light must be thrown through a narrow slit, about 6 in. from the lens. Then place another lens about 12 in. beyond the small opening and the prism about 6 in. beyond this second lens; the rays of light passing through these lenses and prism will throw the coloured spectrum vividly on a screen, placed at a suitable distance to receive it. If used by sunlight, a mirror will throw the rays through the lenses on the prism, but if at night the electric light should be used. The effect of light on various colours is curiously exhibited in photography, where blue objects are taken as if they were white, and those which are yellow or red, as if they were black. Thus a lady in a blue dress, with yellow ribbons, would be represented in the photograph as in a white dress with black ribbons. Modern philosophers deny that there are seven distinct colours in the spectrum; they declare that there are only three so-called primary colours,—namely, blue, yellow, and red; and that the other four are produced by the blending of the primaries. If you look at a sheet of white paper through the prism, you will find that the warm rays verging from orange to red are on one edge, and the cool rays green shading to blue are on the other. There is no line of separation between yellow and red; it is impossible to say where the one ends and the other begins. If the sky is clear the sun appears bright yellow; when obscured by fog it becomes deep red. It may be that in light there are only two fundamental colours,—orange representing essentially light and heat, and blue coolness and shade. These phenomena of light are specially interesting; they are, in fact, the foundation of the whole theory of the harmony of colour, and a knowledge of them will simplify the study of those principles to which I will now direct your attention. Perfectly pure light may be represented by white; the total absence of it by black; between these range the tones of grey, which are combinations of colour. There are three primary colours, so called because they cannot be compounded of other colours. These primary colours are yellow, red, and blue. In shades of white light the three primary colours exist in the following ratio:— Yellow, 3; red, 5; blue, 8; and, if mingled in these proportions with white, they produce grey exactly the same in tone as by the admixture of black and white.

The Secondaries.—By mingling any two of the primary colours together, the secondary colours are produced. Blue combined with yellow produces green, yellow with red produces orange, and red with blue produces violet. Thus green, orange, and violet are the "secondaries."

The Tertiaries.—If the secondaries are combined any two together the tertiaries are produced. Green and orange produce citrine, orange and violet produce russet, and violet and green produce olive. Thus citrine, russet, and olive are the tertiaries.

On Contrast.—Every primary colour has a complementary composed of the two remaining primaries; and every secondary has a complementary formed by the remaining primary. Thus every arrangement of colour demands in some shape or other the presence of the three primaries; the eye expects them, and without them remains unsatisfied. For example, take three circular pieces of coloured paper; place them separately on three larger pieces of very light grey paper. Look fixedly on each for a time in a rather subdued light, and you will notice that the red is bordered by a halo of soft green, the yellow by one of violet, and the blue by one of orange. The secondaries again, violet, green, and orange, if placed in the same way, will be found margined by their relative primaries; thus proving that these colours are in fact complementary to each other. They are also essentially contrasting colours, being those which most strongly oppose certain qualities in each other. Thus, red is hot and glaring; green is a quiet, cool colour; yellow is bright and advancing; violet retiring; blue is a cold, orange a fiery colour. This in a few words briefly explains the basis of the whole theory of the laws of contrast in colouring. Nor must I, while speaking of contrasts of colour, omit white and black, the most powerful and most concentrated of all. White reflects light, black absorbs it; and from this cause a white object will appear larger than a black one of the same size.

On Simultaneous Contrast.—When two contrasting colours are brought into contact, they are each affected by the complementary of the other: this is called "Simultaneous Contrast." Allied to this is "Successive Contrast." When the eye has looked fixedly for some time on a coloured spot, such as a large red wafer on a greyish-white ground in a shaded light, if that object is suddenly removed the space lately occupied by it will be tinted with the complementary of it, which in that case would be green.

And, again, there is "Mixed Contrast," where the eye, having looked at a particular colour for some time, suddenly transfers its sight to another object of a different colour, carrying with it the complementary of the first colour, to the injury or advantage of the second, as the case may be. Several men of high attainments have written upon this subject, more particularly Goëthe, who published his interesting work on "The Doctrine of Colours" in 1810, and it has since been translated by Sir Charles Eastlake, who added to it notes of great interest and usefulness. It is also treated of by our own countryman Field, who published most practical and valuable works on colour in 1816. And, lastly, Monsieur Chevreuil, who, in his work published in 1838, illustrated the question of simultaneous contrast by a series of experiments of the utmost importance. This subject of contrast and the complementaries deserves very careful consideration; for they affect materially the relative value of colours juxtaposed. Those who have not considered the subject can scarcely estimate how strongly the complementaries occasionally influence colour. Some years ago I was on a hazy morning walking with a friend over Waterloo Bridge, when my attention was directed to the two towers carrying the Hungerford Suspension Bridge. These were stone colour, with projecting roofs, covered with red tiles. The cornice, in shadow under the roofs, appeared as if painted the most vivid green. When I returned an hour afterwards, the day had cleared, the mist had passed away, and with it the bright green cornice I had so lately seen. In one of the rooms of a club recently decorated by me, where the woodwork is painted warm vellum colour, and the windows are covered with red blinds, the mouldings of the door opposite these blinds, especially where they are most in shadow, show a bright emerald green, there being no green in fact. I was lately in a church where a stained-glass window threw strongly-coloured lights upon the floor. I placed my umbrella on each colour, one after the other, to try what effect the shadows would have upon them; and was delighted to find that in each case, the shadow interrupted the reflected colour and gave the complementary, so that when placed on yellow it became violet, on red it became green, and on blue it became orange. Goëthe gives an example of "Successive Contrast." He says, "I had entered an inn before evening and as a well-favoured girl, with a brilliantly-fair complexion, black hair, and a scarlet bodice, came into the room, I looked attentively at her, as she stood before me at some distance, in half-shadow. As she presently afterwards turned away, I saw on the white wall which was now before me a black face surrounded by a bright light, while the dress appeared of a beautiful sea-green." Here I may as well mention that by tones I mean variations of depth of any one colour; and by hues I mean varieties of colours. I will now call your attention to a series of examples showing the effect of simultaneous contrast on various combinations of colours. Our first illustration shows that when a dark colour is placed near a light, one of the same hue, at the point of contact the light will appear lighter, and the dark darker. The succession of shades, though perfectly flat, has the appearance of flutings through this cause. If you look carefully at the illustrations, you will remark in the contrasts of green and red, or orange and blue, or yellow and violet, how powerfully these colours are acted upon by contact, how they intensify and brighten each other; how orange, by its complementary blue, makes each colour next to it of a bluer tone; how the red renders them more green, the yellow more violet, and *vice versâ*. Others give examples of primary and secondary colours juxtaposed with white, which will be found to heighten the tone of these colours, and is also in turn affected by their complementaries; that grey and white and black and white are each intensified by contact; that grey in contact with other colours adds to their brilliancy, and is itself affected by their complementaries. These illustrations of simultaneous contrast follow upon the theory explained by M. Chevreuil with great precision and ability in his work on colour. Though I highly appreciate and admire his theories, I do not always agree with him when he regulates decorative effects of colour. There is another subject of contrast which, although similar to the preceding as to the laws which regulate it, is different in its application. It relates to the effect produced upon one colour when applied upon the ground of another colour. The changes thus caused are most startling to those who have not experimented upon them. You will find that what looks blue on one ground is green on another; what is yellow in one case becomes orange or green in others. In fact, there are no colours of any positive tone; they are only what they are made to appear.

On Harmony.—I have endeavoured to explain how the various colours act upon each other when contrasted. I have now to consider how they may be brought into harmonious combination. Beware of confusing the laws of contrast with those of harmony, of using in equal proportions contrasts of bright red and bright green, bright blue and bright orange, without such modification as will neutralise one or the other. I speak the more earnestly of this because I believe it to be a popular delusion that contrast is harmony. To arrange satisfactorily various modulations of colour, so that they may mingle together and form an agreeable whole, demands careful study, practice, and taste, and is often a work of great difficulty. Nothing is so charming and refreshing to the eye as a harmonious arrangement of colours. They are "like a sweet chord of music to the sense." I have often been delighted and surprised to find how wonderfully

* From Mr. J. G. Crace's lecture to the House Painters' Association. Although necessarily elementary, a section of our readers may be glad to have the advantage of reading it.

the laws of harmony in colours are expressed in flowers. The hand of nature never errs, whether it brings together in rich full harmony the tones of blue contrasted by yellow and orange in the Garden Iris, or the blue passion flower with its fibrous coronet of deep maroon, and its greenish yellow stamens, the *lancifolium* lily of pearly white dashed with spots of intense carmine, or in defiance of all rule brings the crimson bloom on the glowing scarlet cactus, or the scarlet petals round the violet centre in the fuschia: the most delicate and difficult combinations in each flower are perfect and beautiful, and even its leaves are of the tone of green most suitable for its colouring. Who that has travelled over the Yorkshire moors in August, but must have gloried in the magnificent prospect before him—a bold undulating expanse, thickly covered with rich red purple heather, broken at intervals by patches of feathery ferns, their green intensely bright by contrast with the surrounding heather. I cannot too strongly urge any man who seeks to improve himself in decorative art to study carefully from natural flowers: both for gracefulness of form and freshness, richness, and harmony of colour, they are the very best school for the artist in decoration.*

STEAM POWER AND ELECTRICITY IN AGRICULTURE.

Our prediction, of a good many years' standing, that the time would come when steam-power in agriculture would vie with that of those other branches of manufacture whose expansion had done so much for this country, is on the fair way to accomplishment. Already steam is largely employed in farming operations, and every day its use is on the increase, and improvements and new uses are being discovered and applied. One of the most recent novelties is the application of steam-power to the drying of crops in wet seasons by hot-air blast, patented by Mr. Gibbs, of Gillwell Park, Essex. The plan is simple. It consists in attaching a gigantic iron fan, or blast, to the ordinary agricultural steam-engines, such as are already used on many farms, and still more extensively hired out for thrashing grain and other purposes. This fan is so arranged as to draw the waste heat from the furnace after it has passed through the tubes of the boiler and generated the needful power for the engine, and to apply and utilise this great volume of hot dry air in the various ways most suitable to the different crops to be dried. Of course coke or malting coal is used in the furnace, so that no smoke is produced, and a guard of malting-wire is interposed at the inlet of the fan to intercept sparks. In some recent experiments wet hay was carted to the engine and pitched off the cart, in quantities of about 2 cwt., on the ground before the mouth of the blower, and each lot was thoroughly dried in about seven minutes. In this way a two-horse load was dried in rather less than one hour, so that 12 acres of land might thus be cleared of hay in 24 hours. Wheat was also completely dried, but in a somewhat different way. Each sheaf was spiked upon a hollow conical tube in a small portable shed, and dried by the hot air rushing through the tube. In 15 minutes 32 sheaves were effectually dried. Farmers examined it, and declared it to be in perfect condition for threshing out on the spot. Some amusing experiments in sending hay and wheat through a shaft by the fan-blast to the top of stacks followed. Sixteen sheaves of wheat per minute were thus stacked, or at the rate of 20 acres in 12 hours.

Some new machinery for steam cultivation has been successfully tried on the estate of the Duke of Buckingham. The principal feature was the non-stoppage of the cultivator at the headlands, which is spoken of as one of the greatest novelties in steam cultivation. The machinery (a set of Haye's of Stony Stratford), was set to work, ploughing with a Beard's plough, which, notwithstanding heaviness of soil from previous rains, did its work well, ploughing from 6 in. to 8 in. in depth, and at a rate of from three to four miles an hour. One of Smith's ordinary cultivators was attached, in the place of the plough, on which a man sat in the same manner as a driver on a Hansom cab. The implement, at a rapid pace, made its way to the headland, and without the slightest check in speed ran within a yard of the turntable, and turned round back into its work without the slightest stoppage; and it continued to do so throughout the remainder of the day. This novel feature was produced by a peculiar self-acting windlass. Mr. Hayes is the patentee. The peculiarities and advantages of this windlass are thus summed up:—

1st. By its use there is no stoppage at the headlands in cultivation. 2nd. No checking the speed of the cultivator at the headlands. 3rd. One man superintends both engine and windlass with ease. 4th. No wheels are put in and out of gear. 5th. The anchor man at each headland can stop the implement at the headland or any other part of the field without stopping the engine. 6th. The work can proceed in fogs or by moonlight, as we were told had been done. 7th. An ordinary ten-horse power portable engine, with one cylinder, is all that is required, as it runs continuously, and the steam is never shut off.

Messrs. Howard write to us in reference to the article, "Engineering and Agriculture," in the *Builder* of the 9th, saying, "Your correspondent, 'W. H. W.,' gives no description of the latest mode of working tillage implements by steam-power, and evidently supposes that our productions in this branch are confined to the stationary or 'roundabout' system, whereas we manufacture four different kinds of machinery for steam cultivation." Of these they give detailed descriptions, but it is unnecessary for us to occupy our space with these details.

"This new power in tillage," they add, "is destined to work great and important changes. Steam has supplanted every other power with which it has been brought into competition, no matter whether in the mine, the factory, on the road, or in the stackyard; and we believe that it is to the same powerful agent we must look for increased fertility in our fields, and the means of producing food for an ever-increasing population."

M. Blondeau has sent in a paper to the French Royal Academy explaining the action of electricity on the muscular and nervous system of plants. The scientific world has long been acquainted with some of the facts communicated, but others are curious, and perhaps new:—

"It seems from these experiments of M. Blondeau," says the Paris correspondent of *Land and Water*, "that an induction current only produces a destructive effect on the organs of plants when they are flabby and their tissues filled with liquid matter: on solid tissues it produces but little effect. Nevertheless, by increasing the intensity of the current and applying it for a considerable length of time, the tissues of ligneous plants may be disorganized to death. When the current acts on fruit it hastens its maturity. Electrified seeds germinate much quicker than others, the stalks and leaves being greener and stronger. Beans appear to have been so astonished at this process that the roots struck up after being electrified, and branched into the air!"

If proved not to be unwholesome, remarks our authority, we shall soon see our farmers ploughing by steam and raising crops by electricity, and the faculty recommending a loaf of electric bread in cases of rheumatism.

TECHNICAL EDUCATION.

The Committee of Council on Education have under consideration a scheme for the formation of museums of patterns used in trades and manufactures, designed to improve the technical knowledge of workmen and employers.

Mr. Doulton recently gave notice in the Commons, that, on the 29th instant (this day), on going into committee of supply, he should call attention to the report on technical education by the Schools Inquiry Commission, and should ask whether the Government intended to carry out the recommendations of the Commissioners by instituting a special inquiry into the state of education abroad.

The Committee of the Macclesfield Useful Knowledge Society, with which is connected the local School of Art, draw our attention to the fact that the subject of technical education is now engaging most of the minds of the silk manufacturers of Macclesfield. The local Chamber of Commerce has taken up the subject, and formed a separate committee on it, and the question is about to be investigated. The Useful Knowledge Society itself, and its able Art Schoolmaster, we need hardly add, are also promoting this very important movement. The Macclesfield Council have unanimously resolved,—

"That this council is deeply impressed with the necessity which now exists for a national system of education in this country, particularly with regard to technical education in the manufacturing districts, and that a representation to this effect be made to the members for the borough and county."

The mover of the resolution, Mr. Alderman Bullock, said he was inclined to think, with Mr. Brocklehurst, that this technical education would not only improve the country generally, but Macclesfield in particular. Mr. Bury had spoken about the introduction of new trades. He thought that, with the great improvements which were now being made in manufactures and the throwing trade, the silk trade would yet again flourish in Macclesfield. The mills of Messrs. Brocklehurst were going when other people's mills were standing. He believed that, if they were to thoroughly educate their youth, they would not have the turnings-out as at present, and that the operatives would not be ruled by low demagogues, as they were now.

Mr. Alderman Jesper said that the resolution seemed a little foreign to the business of the Council, but it was a most important one. The ex-mayor, Mr. Wright, at the recent meeting of the Useful Knowledge Society, pointed out the necessity for such an education as that referred to, and showed that on the Continent, where they had labour of a much more scientific character than ours, there were many advantages which we did not possess. He also showed that care was taken to educate even the poorest. That could only be done by a proper system of government support and inspection.

The Macclesfield *Courier*, in allusion to the designs exhibited at the late meeting of the local School of Art, says,—

"Many of the designs, we understand, are well adapted for being wrought in silk. It is very desirable that the French plan should be adopted, of providing in the school not only the means of drawing patterns, but all that is necessary for showing how they may actually be adapted to the loom. For this purpose it would be necessary to connect with the school a reeding machine, a carding machine, and a loom, and thus to localize art by completely adapting it to the requirements of the town, instead of adopting another part of the French system, that of centralising instruction in art, like everything else in that country."

We hope the school will soon be enabled, by better support than it has had, to do all that is requisite; and that for the future the inhabitants of Macclesfield will set a higher value than they have heretofore done upon their School of Art, where the proper technical education of its silk manufacturing artisans will require to be carried on.

SCHOOLS OF ART.

The York School.—The annual meeting of the subscribers to this school has been held, in the large room of the institution, Minster-yard. The Rev. Canon Hey occupied the chair.

The report said:—

During the past year there has not been much to distinguish the working of the school from that of former years. It has been with pleasure that the committee have had to refer to the steady advancement of the pupils, and the superior excellence of the works produced by them in each succeeding year. The number of pupils in attendance on the various classes during the year has been fifty-one. Some of the works of the students have been exhibited in the Yorkshire Fine Art and Industrial Exhibition, and a medal has been awarded to the school for several artistic designs by the pupils. The committee have to acknowledge with thanks the gift of a carved Ionic capital from Mr. Wolstenholme, of this city. Mr. J. P. Pritchett also has given to the school a valuable collection of casts of modern ornamental and architectural details.

Mr. Swallow, the master of the school, addressed the meeting. He said that,—

During the past year the progress made by the pupils had been satisfactory. The number of prizes from South Kensington had not been so great, owing to fewer prizes being now awarded, and those principally to artisans,—a class to a certain extent incapacitated from taking any great number. The standard of success was also comparatively high, and, being of an arbitrary nature, entirely in the hands of officials, could be increased or decreased at pleasure; and, as the tendency has lately been in the direction of decrease, it was not much a matter of surprise. . . . A noticeable feature in the working of the school has been the addition to the artisan class from the railway, and the loan of machinery from the company's works. Technical instruction was exceedingly valuable to the various trades and callings. It enabled a master or foreman to lay down ideas on paper with precision, and the workman, with his cultivated intelligence, to carry out the same. It spoke much for schools of art that they could be so practical in their work. Among the various branches of art, a knowledge of which is capable of imparting the key to sculpture and carving, is the plastic art. One of our best modellers, George Milburn, is one of the foremen to Mr. Ruddock, of London—a native of York, and one of the best, if not the best, decorative carvers in stone at the present day. He remembered another student labouring away at a bas-relief of the Resurrection, something like the one over the gateway of St. Giles-in-the-Fields. That student afterwards received the gold medal of the Royal Academy; and John Adams is now keeping up our country's credit as a clever and successful sculptor in Rome. This teaching must have a practical value, for Walter Craister, another of their students, is disseminating the benefit of art-education at Chester, as master of its School of Art, and at Crewe, where there is a branch school.

At present this school is in debt, and an appeal is made to the local public on its behalf.

The Oxford School.—A public meeting was held in the town-hall, on Thursday in last week, for the distribution of the prizes gained by the pupils in this school. The attendance was very

* *The conclusion in our next.*

numerous, and for a considerable time before the hour announced for commencing, several persons, including members of the University and citizens, were present to inspect the prize-drawings and other drawings by pupils of the school, which were exhibited, together with pictures lent for the occasion by the Department at South Kensington, and by Mr. Combe, the Rev. R. St. John Tyrwhitt, Alderman Spiers, Mr. James Wyatt, Mr. Ryman, Mr. Macdonald, and Dr. Acland. The chair was taken by Mr. T. D. Acland, M.P., supported on either side by the dean of Christ Church, the rector of Lincoln, the Rev. C. L. Wingfield (hon. sec.), the mayor, Alderman Spiers, &c. In the body of the hall there were several prominent members of the University, and members of the city corporation and others, who take a deep interest in the progress and success of the school. Amongst those who addressed the meeting was Mr. Macdonald, the head master of the school, who stated that this year they had forty-nine passes, eight certificates, and fourteen prizes of the second grade to be distributed. In the third grade the result of the elementary works was, that four prizes were given, and two were honourably mentioned. Four were selected for national competition, and one silver medal and a prize of books were awarded. At first sight, in comparing the present with the previous year, it might seem that they were going backward, but if they compared the drawings on the walls, that would be explained; and the conclusion he came to was, that the department had exercised the right they claimed of raising the standard of competition. Considering that this was only the second year of the existence of the Oxford School, and that some of the works against which they had to compete were sent from schools of twenty years' standing, he considered they had done well.

TRADES COUNCILS.

The London Council.—This council has recently held its monthly meeting. The following trade societies were represented:—Iron-founders, carvers and gilders, zinc-workers, boot-closers, plasterers, men's and women's boot and shoe makers, basket makers, &c. Mr. Wood, iron-founder, was called to the chair, and read a letter from Mr. Alfred Walton, of Brecon, in which the following proposition is made to the trade societies:—

"I expect to be in London shortly, and purpose employing my time in something like the following manner. As the building trades appear to me to be about the best suited to form a building company, I intend to devote five nights to the five principal branches of the building trades, beginning, say, with the carpenters the first night, the bricklayers the second, the masons the third, the plumbers and glaziers the fourth, the plasterers the fifth, and submit resolutions in favour of co-operative production."

The secretary was instructed to inform Mr. Walton that the trade societies took great interest in the question of co-operative production, and would call the attention of the trades to the subject, as proposed by him. The president then read the Bill which had been prepared for presentation to the House of Commons, for the purpose of placing trade-unions on the same footing in the eye of the law as other associations. This Bill, after some deliberation, was unanimously approved of.

The Wolverhampton Council.—Seeing that capital and labour are not on quite such friendly terms as they ought to be, and also that there are distinct associations representing each, but no association representing both, the Wolverhampton Trades Council wrote a letter to the Chamber of Commerce, suggesting some kind of union between that body and the trades council, for the mutual benefit of masters and men. The council of the Chamber received the communication in the spirit in which it was written. They appointed a deputation of their body to meet an equal number of members of the trades council to settle preliminaries. Mr. Rupert Kettle, who has already done much towards the settlement of labour disputes in Wolverhampton, is one of the gentlemen appointed to represent the Chamber of Commerce. The local *Chronicle* suggests that perhaps something like the Nottingham plan may be hit upon—a standing council of masters and men, in equal numbers. The plan has been in existence six years, and during the whole of that time there has been, not only no strike, but no serious labour dispute of any kind.

WORKMEN'S REPORTS ON THE FRENCH EXHIBITION.

In the course of the presidential address at the Society of Arts, on the 20th inst., Mr. Hawes, referring to the steps that had been taken to send a number of English workmen to Paris, to study the French Exhibition, on the condition that each workman should write a report, to be sent to the Society, on the special industry to which he belonged, said,—

The sum subscribed amounted to 1,030*l.* which enabled your council to assist about eighty skilled workmen, representing the principal industries of the country, to visit and examine the quality and cost of the work executed in their respective trades by the best workmen of foreign countries. So eager were the workmen of London and of other seats of industry to avail themselves of this assistance that selection sometimes became difficult; and I believe I may state that not one man was so assisted (for the committee did not pretend to pay their entire expenses) who did not bring a recommendation from his employers, or from a number of his fellow workmen, and in some instances from both, assuring the committee of his fitness to undertake the task assigned to him. The endeavour of the committee was to select men whose intelligence and knowledge of their particular trades, and whose position among their fellow workmen, were such that their reports on their respective branches of industry would not only be good in themselves, but would command the attention of their fellow-workmen.

The reports, nearly all of which have been received, are now in the press, and, with a few trifling literal and grammatical corrections, will be printed exactly as they have been delivered to the Society. They will be ready for publication before Christmas, and the council believe they will form an interesting volume, and that the result of the inquiries made by these artisans will convey a great deal of useful information to their fellow-workmen in this country.

The men were received in the most friendly manner by the French workmen. They had access to many workshops, and, by means of the very intelligent body of guides and interpreters provided for them, and with the assistance of several of their own body who spoke French, they were able to obtain a very good insight into the quality of French work and the habits of French workmen. I regret I cannot illustrate these remarks by extracts from the reports, but any attempt to do so would occupy too much time.

It is gratifying to find that the conduct of the men whilst in Paris, and the intelligence they displayed in their inquiries, were so appreciated by the French authorities at the Exhibition, that they have applied for permission to translate the reports for circulation among French workmen.

The committee received valuable co-operation from the members of the Chamber of Commerce at Birmingham, who subscribed liberally to the fund, and selected twenty-five workmen and foremen to represent the various branches of trade carried on in that district. The Chambers of Commerce of Bradford and Nottingham, and the mayor of Sheffield, also afforded considerable assistance.

The success of this attempt to improve the acquaintance of our artisans with the work of those engaged in the same branch of industry abroad has been so marked, and the aid afforded has been so gratefully received by the workmen themselves, that the Council hope, ere long, to submit the report of another committee, just appointed, to consider the best mode of continuing this inquiry by working men into the state of the industries of their competitors in foreign countries generally; the intention being, if funds are forthcoming for the purpose, to send annually a small number of artisans, carefully selected, to one or more of the capitals of Europe, to study the productions of their respective trades, and report upon them. The plan is not yet matured, but is one which I have every reason to hope will tend to continue to English industry the benefits which an intelligent study of the French Exhibition by our workmen of the present day must certainly have conferred upon it. . . . .

The Council hope that the reports of the artisans sent to Paris to study the French Exhibition will induce their fellow-workmen to appreciate the importance of the cultivation of that pure taste which characterises most foreign work, and that trade societies will thereby be brought to see the necessity of co-operating in the work begun by this Society, by applying a portion of their funds, as we have done, in assisting their members to obtain a knowledge of foreign industry, its capabilities and its cost, instead of applying them to the maintenance of trade regulations, the tendency of which is often to cramp the energies and intellect of their members, and to foster ideas of native superiority quite inconsistent with the efforts which must now be made if we are successfully to compete with our intelligent and industrious foreign rivals.

The Council have every reason to believe that the reports, when published, will be interesting not only to the writers' fellow-workmen, but to all interested in the progress of industry; they will be found to contain a singular unanimity of opinion upon the deficiency of artistic education in this country,—upon the want of the opportunities enjoyed by foreign workmen to cultivate their taste, and upon the superior position workmen hold in Paris to that held by the same classes in England; and, considering that they are written by men most of whom have never before attempted to write a report on any subject, and all of whom are actually engaged in industrial occupations, they will be found, I venture to think, in most cases, creditable to their authors, and will, I feel satisfied, be received with the consideration they deserve. They will show the public that working men do not fear fair criticism, and that they are not unwilling to admit superiority when and where it appears to exist; and they will be specially acceptable and useful to working men as emanating from members of their own body, selected only with reference to their fitness for the work they undertook.

MONT CENIS TUNNEL.

The Italian Government have published their usual monthly statement of the progress made in the Mont Cenis tunnel. According to this an advance of 131·85 mètres has been made during the month of October, of which a length of 71·20 m. was excavated on the Italian side at Bardonnèche, and 60·65 m. on the French, at Modane. At the Italian end the tunnelling proceeds more rapidly than at the other. Up to the 31st October the length of tunnel excavated was 4,640·10 m. at Bardonnèche, and 3,024 m., making a total length of tunnel executed of 7,664·10 m.; deducting this from 12,220 m., the total distance from Modane to Bardonnèche, there remain 4,555·90 m. of tunnelling to be done. From the satisfactory manner in which this important work proceeds, there seems to be little doubt that it will be completed in 1870, if not earlier.

During the present year 1,329·56 m. of tunnelling have been done, whilst during the whole of last year the progress made was only 1,024·99 m.

ST. MARY-LE-BOW CHURCH, CHEAPSIDE.

The re-arrangements of this church, which are now completed, have been carried out by Messrs. Browne & Robinson, the contractors, from the designs and under the superintendence of Mr. James L. Pedley, architect. The alterations consist of the removal of the north and south galleries, organ loft, and organ, pulpit, desk, high square and irregular pews, and strong-closet. The large oak screen at the north-west entrance has been taken away, and turned round to face the south. The large monuments which formerly blocked up one of the west-end windows have been taken down, cleaned, and refixed at the end of the north and south aisles, and all the ironwork which formerly guarded these works of art (one by Banks) has been removed. The pulpit is lowered, and stands upon a moulded Caen stone base at the north side of the nave. The prayer-desk, which is made of the old wainscot and carving, is placed on the south side, and there is a lectern provided. The pews are all open, and reduced to a uniform height and width of 3 ft., with sloping backs, and are made of the old wainscot as far as practicable, and to accommodate 400 adults.

The organ (which has been reconstructed, considerably enlarged, and improved by Mr. G. M. Holdich) is placed on the floor of the church at the east end of the north aisle. The additions made to the case have been ornamented with

perforated panels; the aisle flooring has been taken up and relaid,—the centre aisle and space in front of the altar-rails with tile pavement in black, red, buff, and white quarries in a pattern, by the "Architectural Pottery Company." The ceiling has been cleaned and slightly tinted. The lighting of the church is by five stars of twelve lights each, and suspended by brass rods from the key-stones of the arches; and two gaseliers, each 6 ft. diameter, having eight branches, each containing three burners, making a total of twenty-four burners in each gaselier, and a total of 108 lights. This department has been carried out by Mr. Geo. Benkert, Finsbury. Nearly 2,000*l.* have been spent. The windows require a little stained glass, and the walls some colour.

THE PROPOSED NEW METROPOLITAN CATTLE MARKET.

The intention of the Government to apply to Parliament for power to establish a cattle-market for foreign cattle is meeting with opposition. The Corporation of London have sent a deputation to the Privy Council-office, objecting to it on the ground that the market in Copenhagen-fields is already a losing concern, which the new project would utterly ruin, and that the corporation had intended to have devoted a portion of that establishment to the reception and slaughtering of foreign cattle. The president of the Privy Council promised to consider the matter. The butchers have passed condemnatory resolutions on the proposal, on the ground that it will compel them to slaughter all foreign cattle imported into London in the *abattoirs* adjoining the market. Correspondents of the *Mark-lane Express* urge the slaughtering of foreign cattle at the port of debarkation, and also object to the building of additional slaughter-houses at the present cattle-markets. The object is said to be to secure a constant and certain supply of dead meat at the new Smithfield Market; but it is considered that by slaughtering foreign cattle in London, our English herds will never be safe from devastation.

CITY RAILWAY IMPROVEMENTS.

Sir,—May I venture to appeal, through the medium of your columns, to that board of directors whose recent railway improvements have cast such a lengthened shadow over the street that is called "Sun," believing that the partial eclipse of business caused thereby will shortly pass over, if the following public improvements be carried out. It is simply that the long waste piece of ground at the side of the Broad-street Station, extending from Liverpool-street to Sun-street, be thrown open, thus relieving the traffic of Liverpool-street (which, by the bye, itself looks very forlorn, in anticipation of further railway improvements), opening up a "short cut" for those who have to return along Bishopsgate-street, relieving the present approach to the station of a considerable number of people, restoring, as a matter of justice the traffic of Sun-street to something like its normal condition, and completing the arrangements of this very handsome and commodious station. The appearance of the waste ground alluded to is at present in striking contrast with the elegant terminus, and would require little or no outlay to render it useful in the manner described. I trust that the above suggestion will be favourably received. Viator.

ENGINEERING AND AGRICULTURE.

THE LAND DRAINAGE ACT.

The article signed "W. H. W." in your number of the 9th instant, and under this title, has attracted my attention. It relates to a subject in which I have taken a special interest, and I fully concur in all your correspondent affirms as to its very great importance, and its being one in which engineers may be profitably engaged, whilst at the same time they may confer great benefit upon the country.

There can be no doubt that arterial drainage, irrigation on an extended scale, reclaiming land from the sea or rivers, as enumerated by "W. H. W.," and I will add, wet and dry warping, are amongst the best works that the profession can be engaged in, not alone as national, but as safe and profitable commercial undertakings.

There is already an enormous amount of talent and industry at work in producing mechanical appliances, which are used for every possible purpose in the different operations of the agriculturalist; but the civil engineer has not hitherto been enlisted in the cause, or he has not considered it worth his attention to practise in the branches connected with the subject, although there is a very wide field open to him.

I cannot agree with "W. H. W." that there is that want of spirit in the landed proprietors in not undertaking improvements on an expensive scale which he attributes to them; and we should consider the difficulties that many of them labour under, either in the want of spare funds, or their having only a life interest in their properties, or their lands being subject to leases or agreements which prevent their dealing with them, and many other impediments; but I know that they are generally fully alive to the value of such improvements. One of the difficulties in their way is the occupying tenant, who is frequently averse to improvement because it increases his annual charge, notwithstanding that he is really, for the time being, by far the greatest gainer.

I fully agree with "W. H. W." as to the mistakes committed and the money that has been squandered by works, more particularly those of drainage, being designed and executed without the aid of the skill and experience of the engineer, and, above all, the limited and half-measure views which so frequently prevail in designing these works.

"W. H. W." seems so fully to have discussed all the questions relative to agricultural engineering which are the basis of all the minor operations, for the purpose of extending the productions of our island, that I need not occupy more of your space, but proceed to point out, which is the reason for my troubling you with this letter, the means by which arterial drainage and outfalls, and reclamations of land from the sea and rivers, can be carried out.

The difficulties that have hitherto stood in the way of those who may have been willing to effect these objects, have arisen from the want of unanimity and mutual co-operation of all the parties concerned; for the owner of ten acres of land could, till lately, prevent the improvement of 5,000, and this obstruction could only be overcome by the tedious, uncertain, and expensive process of procuring a special Act of Parliament. In 1861 was passed an Act called "The Land Drainage Act, 1861," 24 & 25 Vict., cap. 133. I was engaged by the late Sir G. Cornewall Lewis, then at the Home Office, to assist in drawing it up. This Act gives powers under two forms to enable landowners to combine to carry out the works of widening, deepening, straightening, and otherwise improving all rivers, and reclaiming lands by embankment from the sea and rivers, and to tax the areas in proportion to the benefit conferred.

Engineers and others will see in this Act that there are ready and simple means of effecting these objects. As inspector under that Act, I have held about twenty meetings, and have settled as many cases, some of which have been carried out to the great advantage of the promoters, some are in progress, and others are in abeyance.

I shall be glad at any time to explain the working of the Act, or to give any information to those who may require it. I make this offer as I am fully assured of the good that would result from the extended application of the Act, and from my position I can promote its operation, but can hardly myself, except under certain circumstances, undertake works.

Richard B. Grantham.

STOP-COCKS IN HOT-WATER PIPES.

Sir,—Will you allow me space in your columns to warn the trade, especially hot-water men, of the danger caused by placing stop-cocks in the flow and return pipes of hot-water apparatus by which the boiler can be, as it were, hermetically sealed. Out of several instances I will mention one that came under my notice on Monday, the 4th instant. The job (new boiler and pipes) had only been finished on the Saturday previous by a first-class London firm, in which a stop-cock, with spanner screwed on, was fixed in both flow and return pipes leading from kitchen boiler next the hot-water cistern upstairs for supplying baths, &c. I was told they were placed there for shutting the water off, should the boiler or pipes leak at any time: very little advantage that for the risk incurred.

It appears the gentleman had misunderstood the use of them, for on Sunday night, finding but little water in the cisterns for supplying the above, he turned off both cocks, thinking to avoid an accident through an insufficient supply of water. After the fire was lighted on Monday morning, an unusual hissing noise in the boiler and pipes, and some of the joints commencing to leak, so frightened the butler that he had the fire raked out immediately, otherwise there would have been an explosion, and most likely loss of life. I hope this will be the means of condemning so dangerous and at the same time useless an addition to hot-water apparatus. F. Fisher.

THE AMERICAN SYSTEM OF SINKING PIPES FOR WATER.

Sir,—Can any of your correspondents inform me in the above system of sinking pipes for water (which is to be tried for the Abyssinian expedition), whether it is necessary to take any steps to prevent the pipes from being stopped up at the bottom in the act of boring. It is supposed that five or six small pipes might prove sufficient where there is a probability of coming to water. W.

VENTILATION OF SEWERS.

Sir,—Under the above heading I have read Mr. G. A. Rowell's letter in the *Builder*. Before the principle which he suggests could be applied extensive structural alterations would require to be made in sewers and their attachments.

At present, both brick and pipe sewers are ventilated by means of air shafts, built at intervals along their course, the tops of these necks or of the *débris* pits connected with them, being covered with iron gratings.

Before an exhausting engine could be set to work it would be necessary to close these openings effectually, and to provide for the more secure trapping of street gullies, water-closet pipes, and kitchen sinks, otherwise the power of the engine would be spent in pumping atmospheric air through these and other openings, whilst the lighter and more deleterious gases would still lodge unmoved in the summit or highest parts of the sewers. I am doubtful of the success of any such plan of ventilating sewers to a useful extent; but, if practicable, furnaces in connexion with openings to the sewers and tall chimneys would perform the requisite work as efficiently and much more economically than steam power. Any contemplated damage from explosions could be combated by making the parts exposed to this danger strong enough to resist. That "the gases to be pumped out would hardly give any resistance" is not a question of much moment. The engines at the blast furnaces in Yorkshire and Staffordshire run up to very high powers, as much as 500-horse nominal, the expense of which I leave you to judge. The real difficulty to be grappled with would be the length of the main sewers and their numerous ramifications not air or water tight on their first construction, to which must be added the numerous openings and connexions, and the imperfectly trapped gully-shoots connected with the street gullies, these latter occurring on both sides of the road, at intervals never or seldom more than 200 ft. apart.

As I have stated, the power of the engine would be spent in pumping atmospheric air through these openings, whilst the radical danger of accumulating gases in the summits of the sewers would remain unchanged.

I have faith in the method of ventilation often suggested of carrying up pipes by the sides of chimneys above the level of the roofs, in connexion with the method in present use. I regard the common bell-trap to kitchen sinks as a source of greater danger than properly-placed and properly-constructed water-closets. In this opinion I think I am justified by facts, as well as in the danger existing at the summits of sewers. This latter could be diminished, if not effectually prevented, by the pipes carried above the level of the roofs.

It appears to me that any plan of ventilation, to be efficient, must be simple, constant, and self-acting, and not violent in operation. This constancy and simplicity, without taking the cost into account, could not be maintained by engine-power. I could offer a suggestion to improve traps generally; and should like to offer a few remarks on the ventilation of chemical works and factories, but must leave these for a more convenient opportunity.

John Blenkarn.

A THIRTEENTH CENTURY FOUNDATION.

At the village of Boughton, in Nottinghamshire, a new church is being built, and part of the stone is obtained from the old church, which is only distant a few yards. When the foundation of the old building was reached in the progress of demolition, a number of large unsquared stones were found thrown together *pêle-mêle*, one over the other, in a very unusual manner. On these stones being taken out for squaring and use in the new church, singular concreted masses were found beneath them, presenting at first sight most puzzling characters. On careful examination, however, I have found these masses to consist of the large stems of the great bull-rush of our ponds, mingled with the stems and leaves of the yellow water-flag, the whole enveloped and concreted together with the thirteenth century cement, now nearly as hard as stone.

The district (which I know well), is eminently boggy, and it seems probable that the old church was built on a site where marsh and bog plants grew. To get a sure foundation it would appear that large stones were thrown in, and cement thrown over them. The cement naturally trickling through the interstices bound the bull-rushes and flags together in one stony mass, and has thus preserved them in a state fit for recognition for eight hundred years.

W. G. S.

A SUGGESTION FOR THE CRYSTAL PALACE.

Now that the Paris Exhibition is closed, and the buildings in the surrounding *Parc* are, I presume, to be taken down, according to agreement, will you allow me to suggest through your columns to our Crystal Palace Company, that several of those buildings are well worth transporting to Sydenham for re-erection; and would, in some measure, compensate to England — and, indeed, to the world, for the collection was unique—for the painful losses occasioned by that most disastrous fire, which can never cease to be a subject of sorrow to all lovers of the beautiful.

The Champ de Mars' Turkish Mosque may not be comparable to Owen Jones's exquisite Alhambra, but it is a very lovely thing; and the Egyptian Temple, with its avenue of couchant lions and handsome flight of steps—to say nothing of its interesting interior, — would worthily fill a space, if not in our despoiled Crystal Palace, at any rate in the grounds.

There were, too, a Turkish Kiosk, very beautiful, in which the blending of colours was most charming; the Palace of the Bey of Tunis; and a handsome Egyptian building, with a fine bold gateway at the end of an avenue of ten large concrete sphinxes painted to represent red granite, and which was used for a museum. This and its contents—arranged in glass cases raised on large square plinths of exquisitely made woodwork, inlaid in bands of a darker colour—would be a most desirable addition to the Sydenham collection.

Ask Mr. Grove, if he be not too much absorbed by his interesting and arduous task of assisting in the Palestine exploration proceedings, to urge this matter upon his directors before the objects are cleared away and lost sight of. Want of

funds will, I suppose, be the great difficulty; but *something will have to be done* to restore the Crystal Palace to a nearer approach to its pristine beauty than it now exhibits; and the objects I have named, being so unavailable to the general public, and, therefore, unsaleable, might doubtless be secured for infinitely smaller sums than would be required to recreate them.

R. F. H.

STRENGTH OF CONCRETE WALLS.

I LIVED many years in the county of Suffolk, where, from the scarcity of strong clay, this kind of wall was common, and most of the old walls are formed (though not with so strong a flux) in this manner, occasionally faced with split flints. One of the finest church towers of the kind, St. Peter's, Ipswich, has been erected nearly 400 years, of concrete, faced with split flint and stone dressings. The tower has an area of 140 square yards, and a height of 100 ft., as perfect and substantial now as when first built. This affords the strongest proof that can be required of the simplicity of those who talk about the instability of concrete erections, and the necessity of bonding them throughout. Clay in Suffolk being so scarce, the early builders, even so far back as the thirteenth and fourteenth centuries, turned their attention to this compound substance: the idea was roughly worked out, I admit, but true in principle, and in pulling down such buildings, the men have far more difficulty, and it takes an infinitely longer time with pickaxes than a dozen brick ones would. I have seen the bricks which have been embedded in the concrete of these old buildings smashed to pieces before the concrete would give way. Some of the walls of the old Grammar School, Ipswich, 300 years old, I saw pulled down myself. The men could not pick them down, but were obliged to mine with gunpowder before they could level them.

Putting aside the known great porosity of bricks, and therefore their great susceptibility to disintegration, and the necessity of some profit to the builder, which the high price of land almost prevents, I trust that I have given proof of the advantage of such concrete erections.

THOS. C. EDGLEY.

MURRAY *v.* GILES.

SIR,—As attorneys for the plaintiff, we trust you will allow us to correct a slight inaccuracy in the report of the above case in your last week's paper. In the last paragraph but one it is stated that "The jury, having been locked up some time, gave a verdict for plaintiff, *so far only* as regards twelve drawings out of sixty-two claimed, and no damages." The jury simply gave a verdict for the plaintiff. In the course of the trial it came out in evidence that many of the drawings claimed had been sent to the contractor's office, or to a Mr. Meesom, and that the defendant had only fifteen drawings in his possession. By consent, a nominal value of *5l.* was set upon those drawings, and the judge, upon the verdict of the jury, ordered those fifteen (not twelve) drawings to be given up to the plaintiff, and certified that he was entitled to costs.

BOWKER, PEAKE, & BIRD.

REMOVAL OF HISTORICAL MONUMENTS

A CORRESPONDENT writes,—"I want to enter an indignant protest against the sale of the inscribed stone from the Roman wall to the American consul at Newcastle (*vide* p. 844). Why *should* "a Portland cement cast" be taken 'for the Old Castle, Newcastle,' while he carries off the original? When he has moved it 'to the United States,' it becomes merely an object of antiquarian interest; but while it remained *in situ*, 'about eight miles from Glasgow,' in the wall of Antoninus Pius, recording the erection of the 3,000 paces, it was an invaluable portion of irrefragable history that the surrounding inhabitants ought to have felt too proud of having had bequeathed to them, to have ever allowed it to pass out of their hands. Inquiry ought to be made as to by whose permission this inscribed stone was taken from the wall and delivered over to Professor M'Chesney. It would be wiser even to take some Roman monument out of one of our museums, and give that to the Professor. The suggestion, doubtless, seems a barbarous one; but it is not really half so barbarous as parting with this link from the chain of our national history. I am quite furious about it."

We fully agree with our enraged correspondent, and must express our surprise that the Newcastle Society of Antiquaries received the statement so coolly. Some endeavour should be made to buy it back from Professor M'Chesney, that it might be deposited, at any rate, in the neighbourhood of the wall it labelled. We refer this suggestion to Dr. Bruce to see it carried out.

CHURCH-BUILDING NEWS.

Oldbury.—The church here has been re-opened for divine worship, by the Bishop of Worcester. The edifice, which originally consisted of nave, with north and south aisles, and galleries, had a shallow chancel formed by one bay, which has now been materially lengthened. The front portion of the western gallery has been removed, and benches, which previously occupied that part of the ground-floor under the west gallery, have been replaced by modern open seats with bench ends. An organ-chamber has been provided on the north side of the chancel, with choristers' vestry in the rear. The chancel has been lengthened inwardly. The church has been thoroughly cleaned, painted, and decorated. The ceilings and walls have been simply decorated. The whole of the work has been carried out under the supervision of Mr. G. Holme, architect, the entire cost being under 1,000*l.*, and by the following contractors, viz.:—Mr. Bonser, of Oldbury, for the builder's work; Mr. A. Gee, of Stafford, for the painting and decorating; Mr. Averill, of Oldbury, and Messrs. C. Smith & Son, of Birmingham, for the gas standards and ornamental ironwork; and Messrs. Haden & Son, Trowbridge, for the warming.

Worcester.—The interior of St. George's Church is now undergoing a partial renovation and repewing, under the direction of Mr. Hopkins, architect; contractors, Messrs. Cox, of the Butts. The ground-floor has been entirely reseated, the seats being of varnished deal, with leaning backs, and no doors. Godwin's encaustic tiles have been laid down in the chancel and aisles. New windows, with frosted glass, and stone mullions and transoms, have replaced the old ones in the lower side walls. The walls and ceiling have been coloured. When the east window is removed, and the galleries made to harmonise with the arrangements on the ground-floor,—improvements which can only be effected by the accession of more funds,—something will have been done to render this poor and unsightly church less objectionable and more convenient in the interior.

Madresfield (near Malvern).—By the liberality of the lord of the manor, Earl Beauchamp, another church has just been completed and opened for the use of the inhabitants. The new edifice is situated near the Court, and is in the Decorated style. It contains a chancel, nave, tower, and spire. The building is of grey stone, with bands of red, and facings of freestone. North of the chancel are vestry and organ-chamber. The roofs are steeply pitched, and of open-timbered work. In the east window are three lights, as there are also in the window at the west end: the other windows are chiefly two-light. The tower opens into the nave by a lofty arch; and the church is approached through a stone porch, and through a wooden lych-gate. There are six bells and a set of chimes. The interior is decorated. At the east and west ends there are some coloured windows. The architect was Mr. Preedy, of London.

Liverpool.—The erection of the mortuary chapel, "owing to circumstances of a painful character," says the *Albion*, is now suspended. It has reached an advanced stage, and in places is almost ready to receive the roof. It would be a boon to the inhabitants of the poor and crowded districts off Scotland-road, where it is being erected; and it must prove a matter for sincere regret if, owing to the commercial disaster of a gentleman who purposed being its sole donor, it should not now be completed, and its uses put fully and fairly to the test. The corporation should take the building in hand and finish it at the public cost; or, failing that, a public subscription should at once be organized to carry out this desirable object, by completing the building without delay.

Hoylandswaine.—The chief stone of a new church now in progress of erection at Hoylandswaine, about two miles from Penistone, has been laid by the Bishop of Ripon. A site has been given by Mr. F. W. T. V. Wentworth, and the parsonage which is nearly completed, has been erected at the sole cost of the Stanhope family. The church, which is being erected from designs furnished by Mr. W. H. Crossland, of Leeds, architect, is estimated to cost 3,000*l.*, and will seat 308 persons. The plan comprises nave, with north aisle and chancel, with chancel aisle, to be used as a vestry and organ chamber. At the west end will be a tower, rising to the height of 70 ft. The height of the nave is to be 30 ft.; length of the church, 87 ft.; width 38 ft. 6 in. The style is Decorated. The roofs are open, and are, together with the sittings, stained in oak. There are 308 fixed sittings, including 80 seats for children, and all the sittings are to be free.

Blackheath.—All Saints' Church has recently been improved by the completion of the upper portion of the tower, and by a broach spire. As the church stands on the Heath, these additions are conspicuous for some distance around. The tower is 14 ft. 6 in. square internally, and the spire is about 133 ft. 6 in. to the apex stone. The materials are similar to those used in the body of the church, namely, Kentish rag for the main walling, and Bath stone for the quoins, dressings, &c. The cost has been about 1,200*l.* Mr. Ferrey was the architect employed, and Messrs. Dove, Brothers, carried out the work. The tower stands at the south-west angle of the church.

Saxlingham Nethergate (Norfolk).—The church here is about to undergo restoration, and also to be considerably enlarged. The present church consists of nave, chancel, south porch, and west tower. These are to be restored (the porch to be rebuilt), a new aisle, equal in size to the present nave, is to be erected on the north side, and a new vestry on the north of the chancel. The works have commenced, the builders being Mr. Rust for bricklayers' and stonemasons' work, Mr. Burrell for carpenter and joiner's work, and Mr. Devereux for plumber, painter, and glazier's work. The whole church is to be seated in oak, with bench-ends and carved poppy-heads; there will also be a carved oak rood-screen, decorated and gilded. The present contracts amount to 1,328*l.*, exclusive of restoring and rehanging the bells, of which there are six, of beautiful tone. The architect is Mr. James S. Benest, of Norwich.

Halvergate (Norfolk).—The parish church here, the nave and tower of which underwent entire restoration some years back, is now to be completed, by the erection of a new porch. The chancel, which is a very primitive structure of red brick, will also shortly be restored. The architect is Mr. James S. Benest, of Norwich.

DISSENTING CHURCH-BUILDING NEWS.

Sheffield.—A memorial-stone has been laid by Sir Francis Lycett, ex-Sheriff of London and Middlesex, at the Methodist Chapel, in course of erection on Ellesmere-road. The chapel,—the architects of which are Messrs. Wilson & Crosland,—will be in the Early English style, and will almost join the Methodist schools which were erected some little time ago. It will be capable of accommodating 1,000 persons, and the cost of the erection will be about 3,500*l.*

Malmesbury.—A new Congregational chapel has been opened here. The building stands in the Westport of the borough, near the place where the celebrated Hobbes once lived. The means to build the chapel have to the extent of 1,000*l.* been promised. Mr. Stent, the architect, supplied plans, which were adopted. The structure is hid from view by a mass of small tenements and farms. The style of architecture is Anglo-Lombardic. There are two entrances from Church-street, which forms the frontage of the church, leading to the body and gallery, which latter runs along two sides of the building. The front contains a centre circular window, filled in with stained glass of simple design. One of the entrances spoken of is under a turret which rises on the south-west side, and to the top of the spire which surmounts it, measures about 70 ft. The church contains sitting accommodation for about 260 on the ground-floor, and about 200 in the galleries. The roof is partly open-timbered, being a semi-wagon-head roof. The pews are all open, and all the joiners' work is of deal, varnished. The chapel is lighted by a large centre corona light, and brackets under the galleries; and it is heated by apparatus supplied by Messrs. Haden & Son, of Trowbridge. At the rear there are an assembly-room, vestry, and other rooms, over which there is a school-room with separate approach. The chapel was erected by Messrs. Light & Smith, of Chippenham.

Tunbridge Wells.—The new Countess of Huntingdon's chapel has been dedicated. The edifice

is in the Early English style, and capable of seating about 700 persons. The architect was Mr. John Wimble, of London. Standing as it does on one of the highest eminences in the town, its tall white spire may be seen for many miles. The roof is arched, and supported by groins and light iron columns. A gallery is erected at the eastern end, capable of seating some 200 or 300.

Victoria Park, London.—Mr. Samuel Morley has recently laid the foundation-stone of the new Victoria Park Congregational Church, situated in Approach-road, Victoria Park, immediately adjoining Bonner's-road, in the presence of an immense concourse of spectators. The new building has been designed by Mr. Poulton, architect, of Reading, for the accommodation of some 3,000 ersons, at an estimated cost of about 8,000*l.*, and will be a plain, but commodious, structure.

York.—The chief stone of a new Wesleyan school-chapel has been laid on a site between the south end of Pilgrim-street and Charles-street, Clarence-street. The total cost of the ground and the buildings to be erected upon it has been estimated at upwards of 2,000*l.*, and towards this sum between 900*l.* and 1,000*l.* have been subscribed. The buildings will cost about 1,200*l.* The school-chapel will consist of one principal room, 61 ft. 6 in. long by 40 ft. wide, and 30 ft. high. It will be divided into bays by the roof, and principals partially exposed to view. The room will be lighted by six large windows on each side and five at the end. The entrance will be by a porch in the side transept. The inside of the building will be lined with white brick, relieved by red and black brickwork in arches, strings, &c. The outside of the building will be faced with red stock brickwork, relieved by arches and strings of white and black brick. The transept gable will be finished by an ornamental bell-turret. Mr. Edward Taylor, of York, is the architect; and the contractors are Mr. Joseph Walker for the brickwork; Mr. R. Slater for the joiner's work; Mr. H. Brumby for the mason's work; Mr. H. Young for the plasterer's work; Mr. W. K. Hartley for the plumber's and glazier's work; Mr. H. Sanderson for the slater's work; and Mr. J. Thomas for the painter's work.

Bollington.—A new Congregational chapel has been opened here. The site is on the north side of the main thoroughfare, Great High-street, at the corner of Beeston Brow. Space has been reserved on which to erect a minister's house. Externally the building presents the appearance of a nave and transepts, the former being the chapel and the latter the school building, the whole being so planned that without any disturbance of the external walls, the transept may be added to the chapel whenever circumstances require its enlargement. The axis, or centre line of the building, forms a considerable angle to the line of street; but owing to a bend in the latter, the south or front gable directly faces the spectator as he ascends Great High-street, whilst on approaching the village under the canal aqueduct a view is obtained of the west side, including the school gable and the tower and spire at the south-west angle. All the external walls are faced with Kerridge parpoints, set in regular courses, the masonry of the quoins, jambs, buttresses, and other dressings being in Bollington stone. The front gable is terminated by a wrought-iron finial, and the spire has a weather-vane. The roof, which has a steep pitch, is covered with slating, formed to a geometrical pattern, in three varieties of tint. The chapel is internally 65 ft. 6 in. by 36 ft. wide, and including the small gallery at the end, opposite the pulpit, will seat 460 persons. It is lighted on each side by five double lancet-headed windows, glazed with cathedral tinted glass, having a coloured border. There is also a large geometrical window at the back of the gallery. Perhaps the main feature internally is the inner roof or ceiling, which is in the form of a pointed arch springing from the side walls, groined over the window heads, and intersected by bold ribs, moulded in plaster. The seats are low, with slanting backs, and are without doors. The floor has a slight longitudinal rise from the communion. The school building is of two stories, and comprises on the ground-floor an infants' room, three or four class-rooms, and a minister's vestry, the upper story being in one large room, 57 ft. long, 25 ft. wide, and 25 ft. high, with an open-timbered roof. It is lighted on three sides, and will accommodate upwards of 400 scholars. The whole premises are heated by steam. The style is Early Decorated, according to the designs and superintendence of Mr. Williamson, architect, Manchester. The contracts have been undertaken by local tradesmen in separate portions,—viz., masonry, Mr. Thomas Allman; wood-work, Mr. S. Handford; plumbing, &c., Mr. W. Hallowell; plastering, Mr. John Mellor. The total cost, exclusive of land, will be about 2,800*l.*

PROVINCIAL NEWS.

Worcester.—New premises have been opened by Messrs. Badger, ironmongers, at the corner of the Foregate and St. Nicholas streets. The building was constructed from the designs of Mr. Johnson, of this city, architect; but owing to legal difficulties the original plans were not adopted, and instead of its being four stories it is reduced to three. The building consists of a shop, show-rooms, store-rooms, and all necessary offices required in the trade. The shop-front contains the largest panes of plate-glass in the city, each containing 100 superficial feet. The exterior of the building has been ornamented, the spandrels to the arched windows being filled with wood carvings. The interior is lighted at night by sun-lights on a new principle. The woodwork was executed by Messrs. Hemming, the brickwork by Mr. Beard, the stonework by Mr. Hiron, the plumbing and glazing by Mr. Tomlinson, and the carving by Mr. Forsyth. The Messrs. Badger gave a supper to the workmen who had been engaged in the erection of the premises, as well as to their own workpeople and a number of friends, to commemorate the completion of the house and to inaugurate the opening of the new shop. About 100 sat down to supper at the Holly Bush Inn.

Miscellanea.

The Costermongers.—Mr. Gathorne Hardy has brought in his Bill to modify the operation of the Streets Act so far as the costermongers are concerned, and it has been read a second time.

A People's Park for Luton.—At a large public meeting of the inhabitants, the offer made by Mr. J. S. Crawley to the Moor Committee, of forty-three acres of land on the old Bedford-road portion of the moor, containing about eleven acres, and a sum of 2,400*l.*, has been accepted. He will also give up the tithe on the land, amounting to more than 9*l.* per annum, and present the committee with 50*l.* to help them to fence the park, on condition of its being laid out by some competent person.

Mrs. Gladstone's Convalescent Home.—An influential meeting has been held in the London Tavern, to promote the object in view in the establishment of a convalescent home at Snaresbrook. Mr. and Mrs. Gladstone were present on the platform, as also the Bishops of Chester and Rochester, Lords Cranbourne and Hay, Mr. Hepworth Dixon, and many others. Appropriate resolutions were unanimously passed, the enlargement of the Home being the chief object in view. Committees are to be formed, and subscription lists opened for the purpose. The object is an excellent one, such as we have long advocated, and we hope that abundant means will shortly be forthcoming to ensure the desired enlargement.

Our Science and Art Collections.—In the House of Commons, Mr. Layard asked the Chancellor of the Exchequer whether it is his intention to propose any measure for the better administration of the British Museum and other institutions in the United Kingdom connected with science and art. In reply, the Chancellor of the Exchequer said he was not prepared to bring forward so extensive a measure as that suggested, but he was engaged with a more limited measure, which, if accepted, will effect such a separation of collections as he promised to give his attention to last session. Mr. Layard also asked whether the sum of 15,000*l.* voted by Parliament for purchases of objects in the Paris Exhibition, in consequence of a report of the select committee appointed last session, has been expended? and if not, why not? In reply to which Lord R. Montagu said, that it was the opinion of the House that we should only expend for this purpose the sum saved out of the fund; and as that did not exceed 4,775*l.*, no more could be expended.

All Saints Church, York-street, Lambeth. This church has been re-opened. From being one of the gloomiest churches of all London, it is now one of the brightest. Colouring has been used, and the seats have been thrown open.

Walking on Water.—At Holyhead nearly the entire population turned out the other day to witness a gentleman walking on the water in the harbour in large shoes, like snow shoes. He did not at any time sink below the knees and went along at his ease, smoking a pipe. Between forty and fifty years ago, a person traversed the harbour of Leith in a somewhat similar way, only in that case the "shoes" were air-tight tins, three of which were affixed to the three feet of a tripod, on which the water-traverser rode. He had paddles attached to his feet, by which he rapidly propelled himself.

Desecration of a Churchyard.—At the Arches Court judgment has been given in the case Adlam *v.* Coulthurst. The promoter is one of the magistrates of Somerset, and the defendant churchwarden of Chew Magna, who had caused soil and human bones to be removed to improve a pathway to the church, and had placed them in a field. Mr. Adlam instituted proceedings before Dr. Lushington, and the defendant was ordered to replace the soil and bones and to pay 100*l.* costs. He alleged that he could do neither—that he was a bankrupt, and that the field was in the possession of trustees under a marriage settlement of his daughter. The present application was a commitment for contempt. Sir Robert Phillimore gave judgment, and dwelt on the sanctity of a churchyard. A serious offence had been committed, and he pronounced the defendant in contempt. He would withhold the proceedings for six days, in the hope that the bones would be restored, otherwise the order would go to the Court of Chancery for contempt.

The Initials F.S.A.—The secretary of the Society of Antiquaries, Mr. C. Knight Watson, wrote thus to Mr. Le Neve Foster, the secretary of the Society of Arts:—"Would you have the kindness to call the attention of your governing body to the following resolution, passed at the last meeting of our council, Earl Stanhope, president, in the chair:—'It having been represented to the council that several members of the Society for the Encouragement of Arts and Manufactures, &c., have appended to their names the initials F.S.A., and thus led to a confusion between the "members" of that society and the "fellows" of this, the secretary was instructed to call upon Mr. Le Neve Foster, secretary to the aforesaid society, and invite his attention to the inconvenience of this practice.' Hoping some measures may be taken by your council to deter your members from adopting initials to which they have no title, I am, &c." Mr. Foster has accordingly informed members of the Society of Arts that, "neither by the charter, by the bye-laws, nor by custom, is there any authority for their placing the letters 'F.S.A.' after their names."

Cookham Bridge.—A new iron bridge over the Thames has been recently opened for traffic, at reduced tolls. The tender accepted for the work was that of Messrs. Pease, Hutchinson, & Co., of Darlington, and London, whose estimate was 2,520*l.*; and premiums were awarded for the two next best designs, those of Messrs. Peto & Co., and Mr. John Pinchbeck, of London. The length of the new bridge over all is 335 ft., and its length between abutments, 300 ft. The clear width of the roadway is 20 ft., and the height of the bridge at the centre, from the bed of the river to the top of the handrail, is 30 ft. The superstructure consists of a wrought-iron continuous girder supported at intervals of 40 ft. upon piers formed of iron piles. Ornamental cast-iron brackets are introduced at the angles formed by the piers and girders. The platform is of Memel planking, 3 in. thick, and is covered with a thick coating of asphalte before the metalling was put on. The abutments are of red brick, with ashlar caps and string courses. The contractors are large iron manufacturers as well as bridge builders. The solidity and strength of the new bridge was lately tested when immense vans containing Mander's menagerie passed over it. There were three of them upon it at one time, the first of which weighed about 14 tons, exclusive of its nine draught horses. The work was carried out under the superintendence of Mr. W. G. Fosswick. The bridge was erected under the inspectorship of Mr. William Atkinson, of Westminster, C.E., who acted as the representative of the Cookham-bridge Company.

CAMBRIDGE ARCHITECTURAL SOCIETY. — On Thursday evening last, Mr. William M. Fawcett gave some account of a tour in Belgium, which he illustrated with several photographs.

PASSENGERS AND GUARDS.—It is said that Government is about to impose an order upon the railway companies for the adoption of a uniform system of intercommunication between railway passengers and guards, and between guards and drivers. The Duke of Richmond, President of the Board of Trade, has met the engineers (telegraphic and general), and the managers of the principal railway companies, for a conference on the subject.

NEW NATIONAL SCHOOLS AT BULWELL.—These schools have been inaugurated. The building, together with the master's house, is of Bulwell stone. Mr. R. C. Sutton, of Nottingham, was the architect; and Messrs. Dennett, of Nottingham, were the builders. The cost was about 2,000*l*. There is a boys' school, 90 ft. by 24 ft., and girls' school, 70 ft. by 20 ft., separated by a movable partition. The building is surmounted by a bell turret. There are separate playgrounds, on a large scale, for the boys and girls, adjoining the schools.

SOUTH LONDON WORKING MEN'S COLLEGE.—This college is intended to offer to working men in South London an education of a high character, by means of classes in languages, mathematics, and physical science, together with lectures on history, politics, moral and social science, &c. There will be also, in connexion with the college, a night school (for men only), a day school for boys and girls, and afternoon classes for women. The college is to consist of six classes of members. The college is expected to open immediately after Christmas. Particulars of the classes, school, &c., may be had from the Hon. Secretary, Mr. William Rossiter, Tottenham, N.

NEW THEATRE IN LANGHAM-PLACE.—It appears that we are likely to have a comic opera in London, Mr. German Reed having taken St. George's Hall, Langham-place, for the purpose. The project could not be in better hands. The hall is undergoing the necessary alterations, in the construction of private boxes, and the enlargement of the stage for the production of opera and extravaganza. An undertaking like this interests all classes; and it has been intimated to us that the prices of admission will be within the range of the poorest amateur. A new operatic extravaganza will be immediately announced, from the pen of Mr. F. C. Burnand, and Mr. A. S. Sullivan, a rising composer. The Gallery of Illustration will be unaffected by Mr. German Reed's connexion with the St. George's Opera House.

IMPROVEMENT IN THE SANITARY CONDITION OF LIVERPOOL.—At a meeting of the Liverpool Health Committee, the chairman stated that the mortality during the past year, as compared with the two previous years, showed a satisfactory decrease; and in comparing the years 1866-7 with 1865-6, there was a saving of between 4,000 and 5,000 lives, the death-rate having decreased from 36 in the 1,000 to 29·4 in the 1,000. During the year the corporation had expended 10,000*l*. in connecting the drainage of poor property with the main drains, 1,800*l*. in opening courts, and upwards of 45,000*l*. in the improvement of poor dilapidated property. In reference to the sub-letting of houses, the medical officer of health said that there were 1,867 houses registered under the Act of Parliament, which he considered was one of the most salutary that could be formed.

BURSTING OF A RESERVOIR AT PRESTON. — A very alarming accident has happened on the premises of Messrs. M'Guffog, cotton manufacturers, Preston. The establishment of the firm named has at the rear of it two lodges or reservoirs for warm water. One of the lodges is a new one, and about six weeks ago, when it was being filled, it burst through the breaking of an iron pipe. Since then the contractor has repaired the breach, and steps were again taken for filling it. The lodge is about 57 ft. long, 37 ft. broad, and 7 ft. deep. When the water had got about a foot from the top, the northern wall of the lodge, which is about 14 ft. high, 5 ft. 6 in. broad at the foundation, and 3 ft. at the top, gave way in the centre; an aperture about 18 ft. wide, and reaching from the bottom to the top of the wall, was made, and through it all the water rushed with great impetuosity, deluging houses and streets in the vicinity. There were no buttresses to the wall which gave way.

SUPPER TO A FOREMAN.—On the evening of the 20th inst. a complimentary supper was given by the farmers and tradesmen of the village of Stratton Audley, at the Plough Inn, to Mr. Copping, foreman to Mr. Simpson, who has recently completed Cotmore House for Mr. W. W. M. Deevar, as a mark of the good opinion he has won in connexion with the building of this mansion.

LIBRARY FOR EDINBURGH.—A meeting for the establishment of a free public library in this city has been held in the New Assembly Hall, the Lord President in the chair, supported by Lords Neaves and Ardmillan, and other gentlemen on the platform. Various resolutions in favour of the object were passed by acclamation, and a subscription list is to be opened at the banks and public places, the proceeds to be devoted to the purchase of a free public library building to be handed over to the town council. Bailie Skinner was appointed to act as honorary secretary.

POLLUTION OF RIVERS. — The Pollution of Rivers Commissioners, Mr. Robert Rawlinson, C.B., Mr. John Thornhill Harrison, C.E., and Professor J. T. Way, with their secretary, Mr. S. J. Smith, have paid a visit to Bolton, for the purpose of inspecting the Croal and its tributaries, comprising the river Tong, the Bradshaw Brook, and the Middle Brook, and their tributaries (which are numerous), and the water-shed to which streams embraces an area of about 50 square miles. Mr. Rawlinson explained to the mayor and other local authorities, that his colleagues and himself had come to make proper preparations for the official inquiry to be hereafter held. The commissioners were entertained to luncheon by the mayor.

NEW CONCERT HALL AT BRIGHTON.—A new hall for concerts, &c., is about to be opened at Brighton. It has been built by Mr. William Childs. The concert-hall will be approached by four entrances,—two in West-street and two in Middle-street,—8 ft. each in width. At the former will be a stone staircase leading to a gallery, 35 ft. in width, capable of seating 300 persons. The front of the building is intended for dining-rooms and other purposes. In Middle-street rooms will be set apart for cloak-rooms, &c. The hall itself is 200 ft. in length, 46 ft. 6 in. wide, and 51 ft. 9 in. in height. The design of Mr. Childs, and the builders under his direction, has been to make the building fireproof. There are also many means of convenient egress. The architect is a townsman, Mr. Horatio N. Goulty. The floor is composed of rolled iron joists, filled in with 6 in. of concrete, the flooring being laid upon the top thereon, and able to support 3 cwt. of every square foot of surface. The construction has been supervised by the Town Council authorities, and the requirements of the Local Act are adhered to.

SANITARY STATE OF NOTTINGHAM.—The annual report of the local sanitary committee is more satisfactory than usual, and the tables are more comprehensive. The death-rate now is 19 per 1,000, and has been gradually reduced in consequence of the formation of new and wide streets in the old and densely populated part of the town; the new sewerage system, which has been very extensive and not yet complete; the extermination as far as possible of cesspools; the regular disinfection and removal of all refuse and decomposable matter; the ventilation of the sewers; and, above all, the regular, systematic, and complete washing and scouring of the courts and alleys from the water mains, aided lately by a steam fire-engine. During the past eight years the expenditure of the corporation on new streets, sewerage, subways, opening out courts and alleys, sanitary work generally, paving with granite, and flagging with Yorkshire flags, and in new buildings, houses, and other works of construction appertaining to sanitary and municipal welfare, has been about a *quarter of a million*; while the total borrowed money is only about 140,000*l*. The rates for the works referred to, *i.e.*, those imposed under the Public Health and Sanitary Acts, are after all no more than 1s. 6d. in the pound. The rateable value of the town proper is about 170,000*l*.; the population of the town proper, 85,000*l*.; and the population of the true urban area, which is, in fact, Nottingham, is about 130,000. The report contains meteorological and rainfall tables by the able surveyor to the corporation, Mr. Tarbotton, C.E. Mr. Richard Townley is the sanitary inspector of the borough.

WORKING MEN'S COLLEGE. — We understand that it is determined to proceed at once with the meeting-hall, museum, and studios at the Working Men's College. The committee have 1,200*l*. subscribed, and are endeavouring to raise another thousand. A design for the new buildings has been furnished by Mr. Webb.

LABOURERS' DWELLINGS IN LIVERPOOL.—The seventy designs submitted in response to advertisements offering premiums of 100*l*. and 200*l*. for the best plans of labourers' dwellings, are to be exhibited publicly from the 28th inst. to December 12, in the Exhibition-rooms, Post-Office-place, between the hours of three o'clock and nine p.m.

THE LAKE IN REGENT'S PARK.—Mr. T. Chambers asked the First Commissioner of Works the nature of the alteration proposed to be made in the ornamental water in the Regent's Park. Lord J. Manners said it was proposed to drain off the water, and level the bottom of the lake to a uniform depth, so as to avert any such calamity as occurred last winter.

TOWN-HALL FOR EAST GRINSTEAD.—At a meeting in the Public Room, at East Grinstead, it has been resolved to erect a town-hall. There was a good attendance. The sum required has been estimated at 1,500*l*., and it is proposed to raise the money by shares of 1*l*. or 2*l*. each. There is a difference of opinion, however, as to whether one floor be enough, and two floors it is calculated would cost 2,000*l*. The chairman of the meeting, Mr. C. Cheval Tooke, spoke in favour of two floors. It would be unwise to build less.

THE LINCOLN ART TREASURES EXHIBITION.—The number of visitors to this interesting collection of pictures, objects of art, geological and other specimens, has been very considerable since it was opened, but not to the extent that could have been desired. The committee have been working during the last twelve months to bring together this collection, their object being that skilled artizans and tradesmen's assistants should have an opportunity of enjoying for a time such an exhibition the equal of which could only be seen by a visit to London. Each evening instrumental music has been provided.

CO-OPERATING AND COMMINGLING. — The *employés*, on opening the extensive retail grocery department of the Bacup Co-operative stores one morning lately, found the place piled up with broken ironmongery, earthenware, bacon, broken timber, a large quantity of bags of flour in all directions, parcels of groceries mingled in confusion with heavy wringing-machines and such like articles. It appears that during the night the store-room, which is above the grocery and general shop, had fallen in, in consequence of the great quantity of goods stored in it. The building was erected in 1862. The damage will be considerable.

INDUSTRIAL EDUCATION OF FOREIGN AND ENGLISH WORKMEN.—An excellent speech on this subject by Mr. Samuel Smiles has been printed. It was delivered at the Huddersfield Mechanics' Institute in October last. Mr. Smiles thinks, with others, "it is every year becoming more clear that it is not only in the school of practice, but also in the school of science, that the advanced workmen must be trained." He dwells upon the sad inferiority of our workmen in general and technical education by contrast with foreign workmen. "While the working class organizations of this country," he remarks, "are exacting regulations for the limitation of skill,—so that the standard of work shall be not that of the best but of the most ordinary workman,—the foreigners are stimulating the skill of their workmen, rewarding those who excel in it, and in all ways actively promoting the industrial education of their people." These are, indeed, serious facts, which can no longer be ignored.

TENDERS

For the erection of six houses at Lower Norwood, for Mr. George Nightingale. Mr. Albert Bridgman, architect:—

Cumming (accepted) £1,400 0 0

For the erection of a house at Notting-hill, for Messrs. Lawrence & Venning. Mr. Albert Bridgman, architect:—

Millard £330 0 0
Cumming (accepted) 325 0 0

For house at Sydenham-hill. Mr. George Truefitt, architect:—

Stimpson (accepted) £4,000 0 0